

“SPARKS”
“TALES”

OF THE WIRELESS PIONEERS



VOLUME III

Published 11-1974
M.A.B.



Book of the Wireless Pioneers

DEDICATED — to the men who "went down to the sea in ships" as Wireless Telegraphers and all those who have earned their living "pounding brass" as wireless or radio operators since the days of Marconi.



PREFACE

I have been afforded the unique opportunity of reviewing the stories and material submitted by members and others for inclusion in this volume of Sparks. I think the material selected by our good Editor and Publisher will be of great interest to all readers as well as of significant historical importance, covering much of our nostalgic past which should not be lost to posterity. It is of importance that such memorabilia be recorded for future generations. Even the "Episodes and Experiences" of Chapter IV will bring back memories to us all - many of which we may have temporarily forgotten during the passing of the years.

A nostalgic incident occurred, a couple of years ago which I think worth relating as it illustrates the strong bond existing between people involved in the development and operations of radio communications.

On April 23, 1972, former employees of 'Federal', received a letter from Charles V. Litton of Carson City, Nevada. Mr. Litton had been an Engineer with Federal. He subsequently left Federal to form his own company in San Carlos, called "Litton Industries" which grew into one of the largest conglomerates of the world.

The first paragraph of his letter read as follows: . . . "Dear Friend: It has occurred to me that forty years have passed since Federal moved away from Palo Alto. The preceding years since 1932, as one looks back, were exciting and fruitful and outstanding as a team effort in communications development, as well as in friendships which have been vividly recalled to this day by me. Many of our group are gone from the present scene, and time is getting short. I thought we might try for a get-together in early June. "

Through his efforts and the assistance of Mrs Litton with the help of others joining in, a luncheon in Palo Alto was arranged and one hundred former employees of Federal were there including Secretaries, bookkeepers, Riggers, Widows, Engineers, Radio Operators and several of the men who made those big old Arcs which you will find in the "Federal Story" - Chapter One, of this book. Dr. Fuller, who was mentioned in the review by Mr. Mayes was the Master of Ceremonies and it was a very gracious meeting.

It was not long after this that Charlie Litton passed away. He had been in many enterprises during his life, but when he knew his end was nearing his thoughts turned to us in the old Federal Company and the people who worked with him. He felt a great bond with them all.

I want to pay tribute to William A. "Bill" Breniman who founded the Society of Wireless Pioneers, for in a similar and parallel manner he has dedicated himself to the brotherhood of wireless and radio men the world around. His untiring interest in the professional radio operators and the fraternity of communications has enabled the Society to become one of the great organizations in our chosen field. His books and publications has brought us together for renewed comradeship and at the same time saved much of the memorabilia and nostalgic memories from being lost forever to posterity. All of us owe him a debt of gratitude.

Oct. 16 1974

Eben K. Cady - President.

COVER PHOTOGRAPH

This color picture is of a "Canadian built" Marconi spark transmitter, vintage 1904 which has been preserved and is now on display at the Canada National Museum of Science and Technology in Ottawa. It was furnished the Society by Mt. J.M. Bryan, Information Officer, Department of Communications, Canada. Our good member Art Stark arranged for its use.

Shanks →
Ed.
Sue B.

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Legend: (*) Deceased. (#) Reprinted by permission.



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BOOK

OF

THE WIRELESS PIONEER





RUDOLPH A.P. ASPLUND
57 - P

The "Historical Section" of this book is dedicated to and in honor of, our late member whose noble-mindedness and love for those of the 'craft' have helped to make these pages possible. We will always remember you . . . "Rudy"!



Historical Papers

**Federal Telephone
&
Radio Corporation**



A  Historical Review

1909 -- 1946



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SOCIETY OF WIRELESS PIONEERS

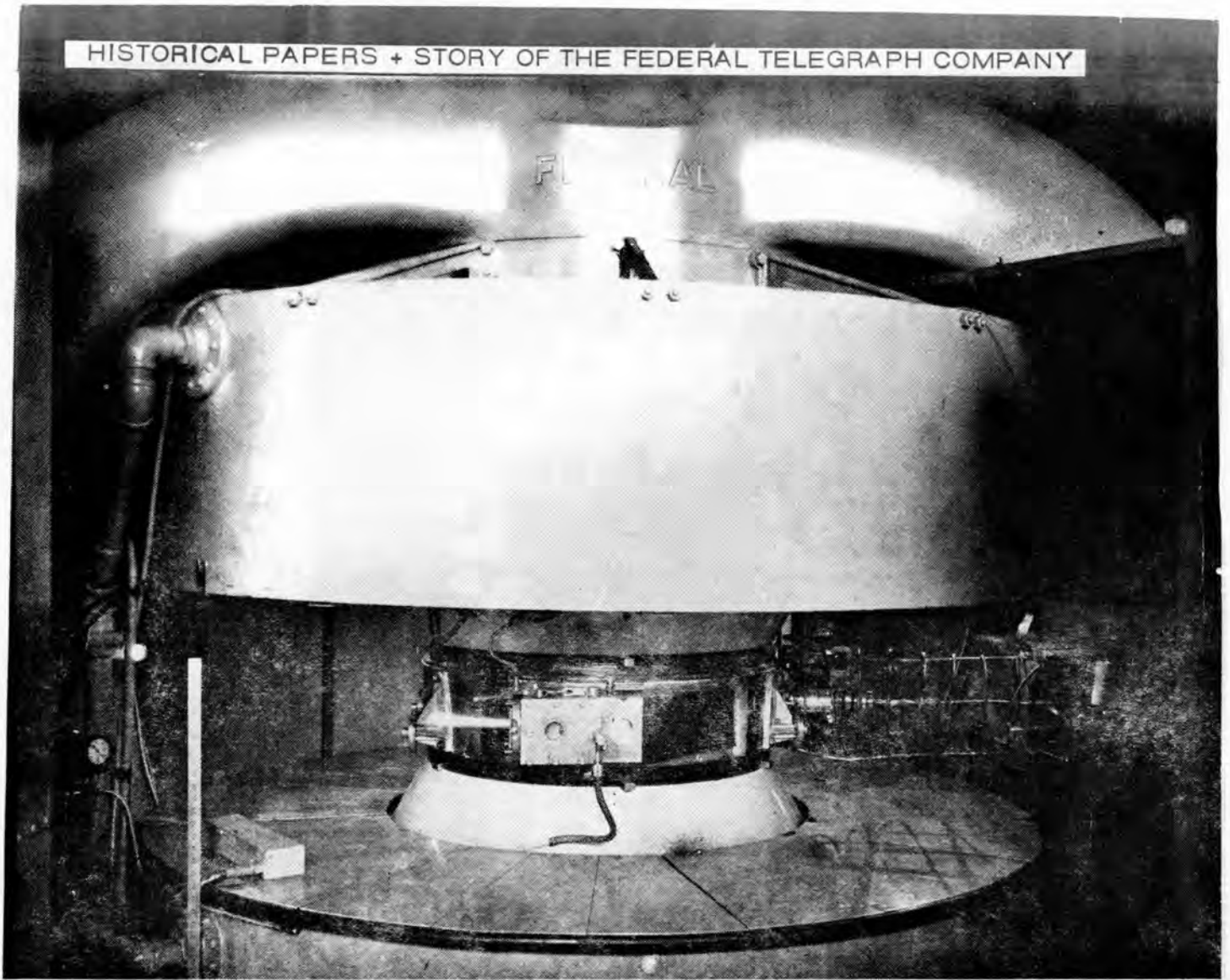


Photo courtesy Radiation Laboratory, University of California.



The illustration above shows the first giant cyclotron ever built. It was constructed under Dr. E. O. Lawrence's direction at the University of California. When completed, it weighed 80 tons and employed a 65-ton magnet cast originally for a Federal 1000-kilowatt arc converter. At the left is shown a view of work being completed on two of the magnet castings in the Federal factory at Palo Alto, California, in 1921. The magnet fields were originally cast in 1918 for a World War I project stopped by the Armistice. They were later intended for a radio station in China. Japanese opposition prevented completion of the Chinese station.

Dr. Leonard Fuller, while vice president of Federal, learned of Dr. Lawrence's need of a magnet for producing a practical cyclotron. Federal, consequently, donated the casting to the University and also assisted in winding the magnet coils.

Thus, to Federal's long history of scientific pioneering, can be added this contribution toward the disclosure of the secrets of atomic power.

Federal Telephone and Radio Corporation

A Historical Review: 1909-1946

By F. J. MANN

Managing Editor, Electrical Communication

FEDERAL had its beginning in much the same manner as so many great enterprises. First there was someone with an idea. When that idea became a reality, it served as the means to a growth which dwarfed even the imagined scope of the original concept.

The man responsible for the founding of Federal was C. F. Elwell, the company's first director and chief engineer. Elwell's idea was to find a practical method of transmitting voice by radio. His search led him far afield, but it resulted in founding an organization that later became responsible for the discovery and development of a number of outstanding electronic and radio devices.

In 1908, Elwell was a tall, athletic young man completing the course in electrical engineering at Stanford University, Palo Alto, California. He had been collaborating with Professors G. H. Clevenger and D. A. Lyon on the design of an electrical furnace for the reduction of iron on a commercial scale. This work was selected by Elwell for his graduation thesis and he was devoting all of his time to it. He had not then even thought of going into radio work although he has spent his entire life since in the field of radio engineering.

The McCarty Wireless Telephone

Elwell was just about to make a trip east to purchase three large transformers for the new furnace when he was approached to do research on the McCarty wireless telephone patent which had been purchased by the Henshaw brothers, bankers of Oakland, California. To persons familiar today with high-fidelity radio broadcasting from transmitters ranging in powers up to 200 kilowatts, the idea that anyone would consider the McCarty patent seriously for radiotelephone transmission seems preposterous. For this patent covered a device intended to permit radiotelephone transmission by means of a spark coil which was to be equipped with two primaries, one

for a microphone and the other for the make and break. This spark coil was to be part of a conventional, damped-wave spark transmitting circuit employing a fixed spark gap, capacitor, inductor, and antenna and ground.

When a position to experiment with the McCarty patent was first offered Elwell, he turned it down because of the pressure of work on the electric furnace. He might also have rejected the proposal because of the hopelessness of expecting such a crude piece of apparatus to operate. However, no one at that time had proved whether it would or would not work and at least several persons including the U.S. Patent Office thought it might. Elwell was invited a second time by the representative of the Henshaw brothers to undertake the research. The Henshaw brothers were anxious to learn whether the patent, on which they had already spent a considerable sum of money, was of practical value. This second offer was sufficiently attractive to cause him to agree to investigate the possibilities of the spark-coil radiotelephone transmitter.

While on his trip east for the furnace transformers, Elwell purchased the necessary apparatus for the McCarty transmitter. He returned to Palo Alto in the summer of 1908 and began work on the McCarty patent at Stanford University. Since Mr. Timothy Hopkins, a trustee of the university who was in charge during the summer, objected to these experiments being carried on there, Elwell had to leave. He therefore arranged for the purchase of a house in Palo Alto located on the corner of Cowper Street and Embarcadero Road.

Elwell erected two 75-foot wooden masts to support his transmitting aerial on the new property. The house he used as a laboratory and dwelling. The receiving station was located in a small wooden hut placed near the base of one of the nearby Palo Alto water towers which served to support the receiving antenna.

It Worked—but Not Well

Two-way transmission and reception was not attempted since it was possible to see the receiving hut from the transmitting station with the aid of a pair of binoculars. Elwell reports that he actually did succeed in transmitting telephone signals using this crude apparatus. As a matter of fact, the incident is recalled vividly to mind because, as Elwell states, he had arranged with his assistant at the receiving station to signal the results of the experiments with a piece of paper placed at one of the four corners of the hut. The position of the paper was intended to indicate the degree of reception. The assistant, however, used such a small piece of paper that Elwell could not see it through the binoculars. When Elwell returned to the microphone he shouted impatiently, "Why don't you put up a piece of paper I can see?" This time the assistant came out with a whole sheet of newspaper!

Demonstrations given on August 29, 1908, were reported in the San Francisco, Oakland, and Palo Alto newspapers in glowing terms. Like flying and other new inventions of the time, the idea of telephoning without wires had appealed to the popular imagination and so any success at all was good newspaper copy. But Elwell had to report to his employers that the McCarty patent was not practical for commercial exploitation.

This work on the transmission of voice with damped waves had completely diverted Elwell's interest from the electric furnace to radio. He had noticed that the few times he did obtain results with the McCarty transmitter occurred when he placed the spark gaps so close together that a small arc discharge took place, which gave slightly damped or nearly continuous waves. With the gaps so arranged it was possible to transmit intelligible speech and music over distances up to five miles. Elwell became convinced that wireless telephony would only be commercially practical when a reliable system of generating undamped or continuous waves of sufficiently high frequencies could be developed.

Early Sources of Continuous Waves

Although Dr. Lee de Forest had invented his audion in 1906, it was not until later when he was working in the Federal Palo Alto laboratories that he devised circuits for the oscillating audion.

At the time, therefore, only two sources of undamped or continuous waves were known—the high-frequency alternator, then only in the development stage, and the Poulsen arc. Several one-kilowatt alternators had been made in the U. S. A. by Alexanderson to operate at a frequency of 50000 cycles. It was possible to transmit voice with these transmitters, but the extremely long wavelength made them impractical except for rather elaborate and costly installations.

Valdemar Poulsen, the Danish scientist, invented the arc that bore his name in 1903. The original work on the arc was done in 1892 by Elihu Thomson who showed that direct current could be employed for the generation of oscillatory currents if capacitance and inductance were placed across a spark gap connected to the supply mains through large choke coils and a magnetic blast provided for the spark gap. Thomson obtained small currents at frequencies up to 100000 cycles. In 1900, William Duddell substituted carbon electrodes for the spark gap and obtained continuous oscillations at audible frequencies. By immersing this arc in hydrogen gas, Poulsen was able to produce higher frequencies and to generate more power. The frequencies thus produced were practical for the transmission of radio signals.

Some reports of Poulsen's work had reached the United States by 1908. While in these papers, published in scientific and semiscientific journals (some of translations from speeches made by Poulsen), there were indications of the potentialities of the Poulsen continuous-wave generator, very little had been done to make use of the invention commercially. A syndicate was formed in Copenhagen to exploit the Poulsen arc patents and develop them for radiotelegraphy and radiotelephony. A station was erected at Lyngby Denmark, and later a second station was set up at Esbjerg, 180 miles away. Over these stations, it had been possible to carry on radio communication, but little more had been done with the Poulsen arc by 1909.

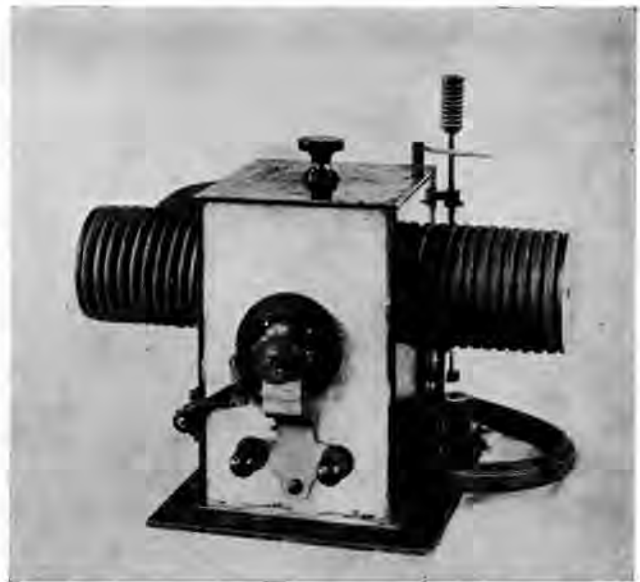
Predominance of the Spark Transmitter

The vast expanse of the North American continent seemed to offer great inducements to long-distance radio development in the U. S. A. No

one had even thought of radio broadcasting, but the search for a practical method of radiotelephone transmission was inspired by the idea then prevalent that the radio someday would replace wire telephony. Even Fessenden, an outstanding radio engineer and inventor of the time, wrote in 1909 in the *Journal of Electricity, Power and Gas* that radiotelephony would no doubt replace wire telephony, at least between cities. And yet, of 475 radio stations then in operation in the United States (1909), all utilized the noisy spark transmitter.¹ As the size of these transmitters grew, the spark-noise became louder and louder so that radio rooms on ships were built like ice-boxes to keep the sound from disturbing passengers. Advocates of the spark transmitter were almost fanatical in its praise.

When Elwell reported to the Henshaw brothers that the McCarty patent was worthless, he had already studied all the available literature on Poulsen's invention, which at that time was scant. Elwell had even cabled Poulsen to ask if he had sold his U. S. patent rights and, if not, what would be his terms. Poulsen cabled back promptly mentioning a price of a quarter of a million dollars and stating other conditions. But when Elwell suggested working with the Poulsen arc to the Henshaw brothers they turned the suggestion down, saying they had had enough of wireless.

The reluctance of the Henshaw brothers to invest further in the wireless business at the time is understandable. First, probably as much money was being sunk in worthless radio patents as in never-to-be-productive oil wells. The whole idea of communication without wires had so captivated the human mind that radio was an easy source of stock exploitation and speculation. Even at that early date, when the art was so crudely developed, money was being accepted for stock in television schemes. Further, the more solid citizenry placed great reliance on the spark transmitter and its possibilities. These were the persons who were still driving sleek horses and buggies and laughing at the noisy, ugly automobile. Science had not yet reached the stage of precision where the new development could be evaluated in advance. So, like the horse and



First Poulsen arc brought to the U.S.A. from Denmark in 1909. Although rated at 100 watts, it actually delivered about fifty watts of radio-frequency power. With it, radiotelephone signals were sent from North Palo Alto to South Palo Alto, thereby demonstrating the efficacy of the Poulsen arc for radiotelephony. The early demonstrations with this arc led to the formation of Poulsen Wireless Telephone and Telegraph Company, predecessor of Federal.

buggy, the spark transmitter was regarded as doing a good and practical job, noisy as it was, and the Poulsen arc was considered strange and just a little unbelievable.

Elwell Goes to Denmark

In view of all this skepticism, Elwell felt he should go to Denmark to see for himself what Poulsen could do. So in May, 1909, at his own expense since he could obtain no financial backing, Elwell travelled to Copenhagen. There he met Dr. Poulsen and Dr. P. O. Pederson,² Poulsen's collaborator. The two Danish scientists took Elwell to a laboratory in Copenhagen where he heard the wireless telephone signals of the Lyngby station ten miles away. Elwell reports that the articulation was perfect although the signals were weak.

The next day Elwell had his first view of the Poulsen arc at Lyngby. While at the Lyngby station, he also heard signals from the Esbjerg station 180 miles away. At the same time, Poulsen also showed him photographic recordings of dot and dash signals made at 200 words per minute. Because of this new rapid telegraph system, it

¹ Robert H. Marriott, "United States Radio Development," *Proceedings of the I.R.E.*, v. 5, pp. 179-198; June, 1917.

² "Peder Oluf Pedersen," *Electrical Communication*, v. 20, n. 2, pp. 133-135; 1941.

was explained to Elwell, the price of the U. S. rights to the patents had been raised to \$450,000.

Elwell was convinced that the Poulsen patents offered great possibilities for development in the U. S. A. He could see now that the silent, steady Poulsen arc, in conjunction with the high-speed telegraph system, had practical advantages for wireless telegraphy capable easily of overshadowing the noisy and slow spark station. Therefore this telegraphic development could and did become even more important than the radiotelephone Elwell had travelled to Europe to see and hear. Even with all these possibilities, the decision of a young man just out of college and with no financial backing to take the rights to the Poulsen patents back to America was, to say the least, ambitious.

Buys Rights to Poulsen Arc

Elwell negotiated with the Poulsen interests to buy the patents and, after investigating him carefully through the American consul in Copenhagen, they agreed to an option for only \$1,000 in cash. Elwell also agreed to purchase two Poulsen transmitters, one rated at 5 kilowatts and one at 12 kilowatts, for a total of \$6,000, half payable as soon as he returned to the U. S. A. and half when the sets were ready.

Elwell returned to New York elated over obtaining the contract and full of hope of raising money necessary to form a company to develop the system commercially. He went to Wall Street and met Thomas Fortune Ryan and other leading financiers, but by then these men were very shy of wireless schemes. There had been so much stock jobbing in damped-wave or spark wireless systems that the market in them was extremely bad. Elwell decided from this reception that the option obtained in Denmark was going to be very difficult to finance.

Unshaken in his faith in the Poulsen arc, but realizing that financial backing would not be forthcoming so easily as he had originally hoped, Elwell that summer made a second trip to Denmark. He was able to renegotiate the contract on easier terms requiring less cash and a greater amount in stock in the new company to be formed. With this new contract, he returned directly to Palo Alto.

On his second trip to Denmark, Elwell had purchased a small Poulsen arc extravagantly rated at 100 watts. It consisted chiefly of a small hollow cube formed by two sides of marble with the other two sides, top, and bottom, of brass. The anode was mounted in the center of one of the marble slabs and the cathode in the center of the other. Thus the marble acted as insulator to the electrodes. It worked on 110 volts, d.c., giving about one ampere. It was this arc Elwell took to Palo Alto, the first Poulsen arc in America.

First Arc Telephone Conversations in America

With the small Poulsen arc, Elwell constructed a wireless telephone on which he was able to transmit clear telephone signals from North Palo Alto to South Palo Alto, a distance of about one mile. This equipment convincingly proved the efficacy of continuous waves for radiotelephony and completely overshadowed the previous crude attempts with damped waves using a spark coil as a generator.

Present at these first demonstrations were David Starr Jordan, president of Stanford University, Dr. C. D. Marx, head of the civil engineering department, Prof. C. B. Wing of the civil engineering department, Prof. L. M. Hoskins, head of the mathematics department, and many other members of the Stanford University faculty as well as prominent citizens of Palo Alto. All of these men were impressed by the demonstrations and convinced of the commercial value of the arc. When Dr. Jordan offered to put up \$500 toward starting a company, a number of other faculty members and Palo Alto financiers followed with financial support.

In October 1909, the Poulsen Wireless Telephone and Telegraph Company, direct predecessor of Federal, was formed as a California corporation. Assisting in the incorporation were R. W. Barrett, F. A. Wise, and M. A. Thomas, all Stanford University graduates. Among the first directors were Barrett and Professor Marx. Elwell was made director and chief engineer. The new company set up offices in the Foxcroft Building, 68 Post Street, San Francisco, California.

Although some cash had been collected in connection with the incorporation, a great deal more money was needed to purchase the patent rights

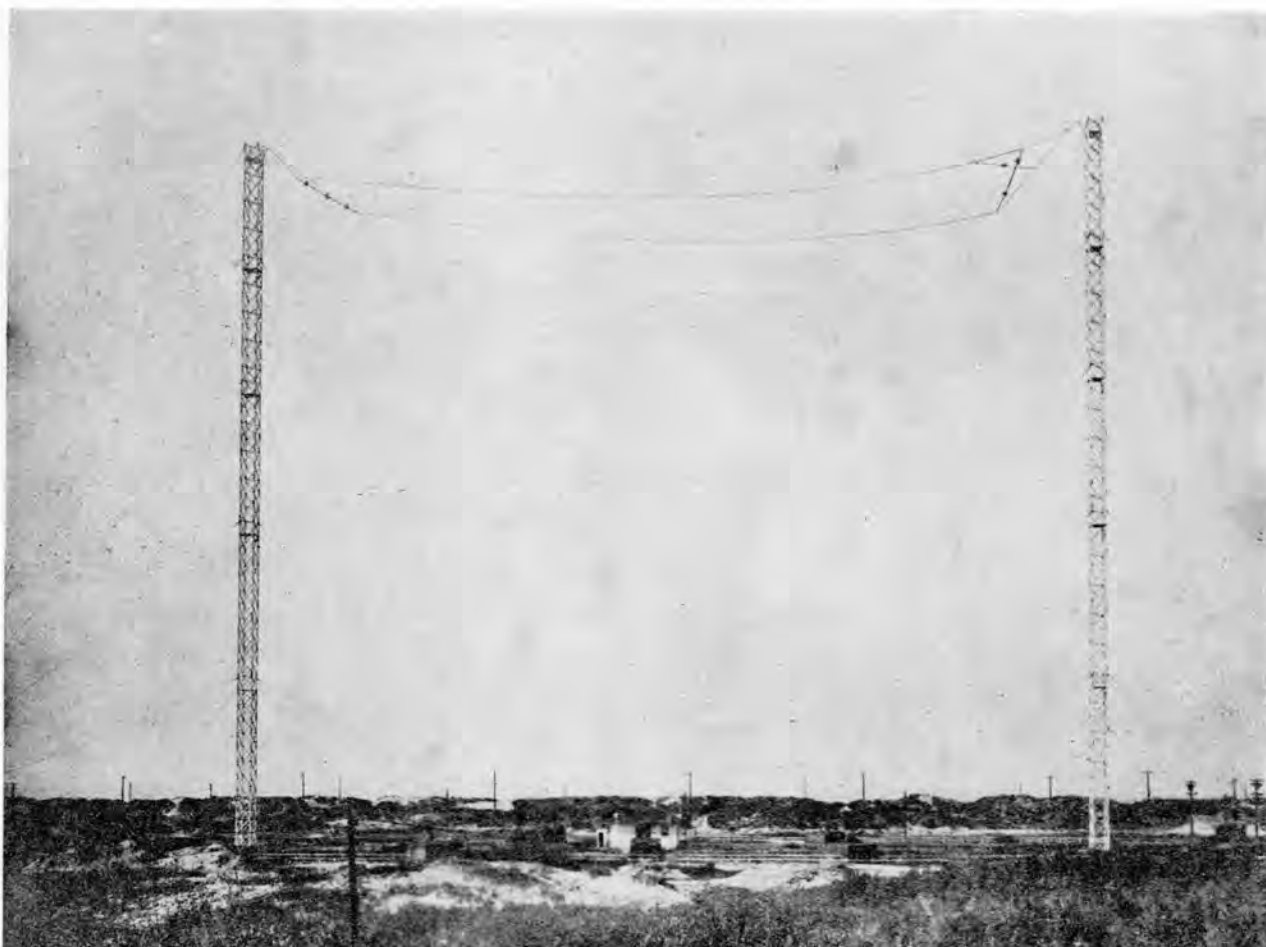


Photo courtesy C. F. Elwell

The two 300-foot wooden lattice masts of the old "Beach" station erected near Ocean Beach, San Francisco, in 1910. Lengths of cables previously used to propel the old Geary Street cable cars in San Francisco provided inexpensive guys for the two masts which were the first of their kind built in the U.S.A. The first paid commercial messages handled by the Federal Telegraph Company were sent from this station.

and to finance manufacturing facilities. Stock had been issued and it was planned to sell shares to small investors since large financial interests had refused to support this new radio venture.

Stockton and Sacramento Stations

Because so many radio stock ventures had proved failures and since it was still an age when seeing was believing, it was decided to build two stations at least fifty miles apart for radiotelephone demonstrations. Sites in Stockton and Sacramento, California, were chosen for the first two radio stations to employ the new system. It was planned to use the transmitting apparatus purchased from Denmark and which was scheduled for early delivery to the U. S. A.

Two 180-foot masts were erected at each site, each mast consisting of 90-, 75-, and 60-foot poles spliced together. These poles had to be towed to

each city behind the river steamer which then traveled regularly from San Francisco, because they were too long to be taken on board.

The two Poulsen transmitters finally arrived in New York and the company, from its small financial resources, was forced to pay \$4,500 duty on them before they could be shipped to Palo Alto. In addition, the fare and expenses of three Danish engineers had to be provided so that they could come to the U. S. A. and install the new apparatus. The three engineers, Peter V. Jensen, F. Albertus, and C. L. Schou, duly arrived and set up the apparatus at Sacramento and Stockton early in February, 1910. It is interesting to note that Jensen and Albertus left the company, along with E. S. Pridham, one of the company's first engineers, shortly after to go into business for themselves. The name of Jensen is now well known as a manufacturer of loudspeakers.

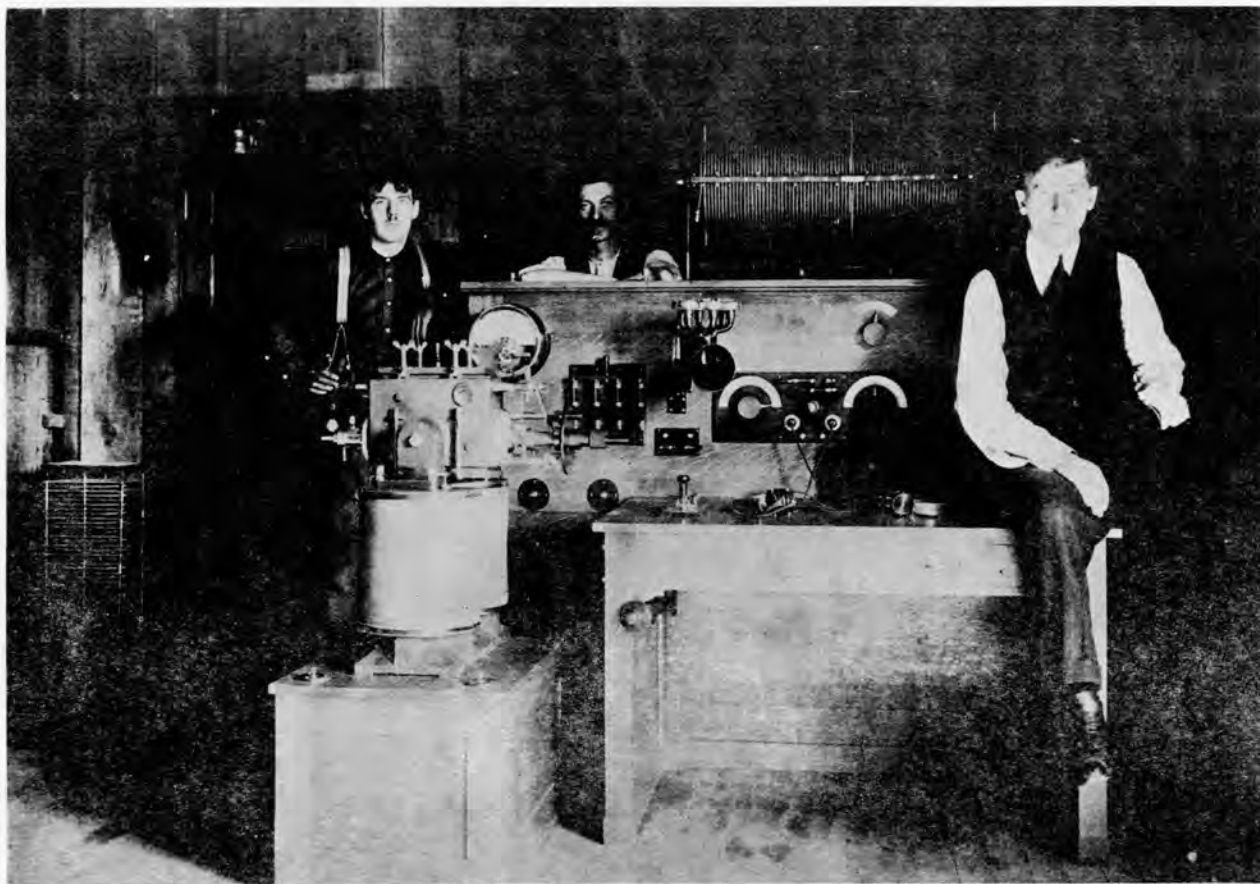


Photo courtesy C. F. Elwell

The first complete arc transmitter and receiver built by Federal. The microphone for radiotelephony with its many "buttons" to permit handling heavy currents may be seen in the center of the rear panel. From left to right, are D. Perham, C. Albertus, and Peter V. Jensen. Jensen later became well known as a manufacturer of loudspeakers.

While the two new stations were being tested, the operators of a large spark station located in Sacramento attempted to break up the tests by creating interference. This practice was not unusual in the days before radio laws were enacted in the U. S. A. and was accomplished simply by turning the transmitter on and letting it run or by "putting a brick on the key." The broad-tuning spark transmitters blanketed all reception in the vicinity and many were the rival radio stations put out of business by this process. At least these operators recognized the arc stations as potential rivals, a rivalry that was to continue for years after between the arc and the spark. The interference from the spark station did break up telephone tests, because the conventional detector and receiver were used for radiotelephone reception, but it had little or no effect on arc telegraph signals since a new type of detector, called a ticker, was used for reception of the undamped waves from the arc.

Dr. David Starr Jordan Officiates at Opening

The two stations were opened officially on February 19, 1910, with the press and public invited to attend the ceremonies. Dr. David Starr Jordan, president of Stanford University, had consented to go to Sacramento to officiate at the opening ceremonies. The following excerpt from an article which appeared in the *Sacramento Sunday News* February 20, 1910, gives some idea of the reception the press gave this opening:

David Starr Jordan, eminent scientist as he is, probably enjoyed an experience yesterday in this city that had never been his lot before.

He went out to Elmhurst and conversed through the wireless telephone station there with a Stockton man fifty miles away. Dr. Jordan freely expressed his gratification over the experience.

The instrument certainly ranks with the world's greatest achievements. The instrument somewhat resembles the ordinary telephone, but is much larger. A *Sunday News* representative was among the considerable number who went out yesterday to test the new discovery by the practical method of holding conversation through it. The response from Stockton where the receiving end is at present located was rendered in a far clearer voice than the wire telephone is capable of. The tone was wholly free of the

metallic sound common with the regulation instrument. The voice was startlingly natural. The Stockton man rendered Yankee Doodle with such effect as might have been expected had he been present on the spot.

The capability of the invention is not limited to the mere transmission of sound. By a simple contrivance the telephone will carry three hundred words or more per minute and reproduce them faithfully at the receiving end.

The wireless telephone is free of the impediments that have been observed in the wireless telegraph that has been exhibited here. It is noiseless, to begin with, and there is no delay in reaching the receiver of any message desired to be sent. In point of speed and dependability the regulation telephone has no advantage whatever over the wireless, while the latter excels the old immeasurably in numerous respects.

Although sales of shares in the company, following the opening of the two stations, were good, the amount of each sale was small. It was soon realized that more substantial capital would have to be attracted to provide the funds for the patents and to permit the company to expand. However, there were still doubts expressed about the new system. One of the chief difficulties experienced with spark transmitters was their broad tuning and resultant interference when more than one station was operating at the same time. With only two arc stations, the sharp-tuning feature of undamped-wave transmission, a feature which finally delivered the death blow to damped-wave transmission, could not be demonstrated. It was decided, therefore, to build a third station at San Francisco in order to show that a number of continuous-wave stations could operate simultaneously without interference.

A Laboratory in a Shed

Since a third arc transmitter would be needed for the new station, the company decided to begin manufacture of its own arcs. Property was purchased at the corner of Emerson Street and Channing Avenue in Palo Alto. The new property had a small house near the corner and a shed in back of it fifteen feet wide by thirty feet long. This shed was doubled in size and became the first factory for the construction of Poulsen arcs in the U. S. A. This same shed later took on further historical significance since it was there



Federal's first laboratory and factory located on Emerson Street and Channing Avenue, Palo Alto, California. The first Federal arcs were manufactured in the corrugated iron shed behind the cottage, which was used as a laboratory. The shed became a place of historical significance when, in 1912, Dr. Lee de Forest and his assistants developed the audion amplifier and vacuum tube oscillator there.

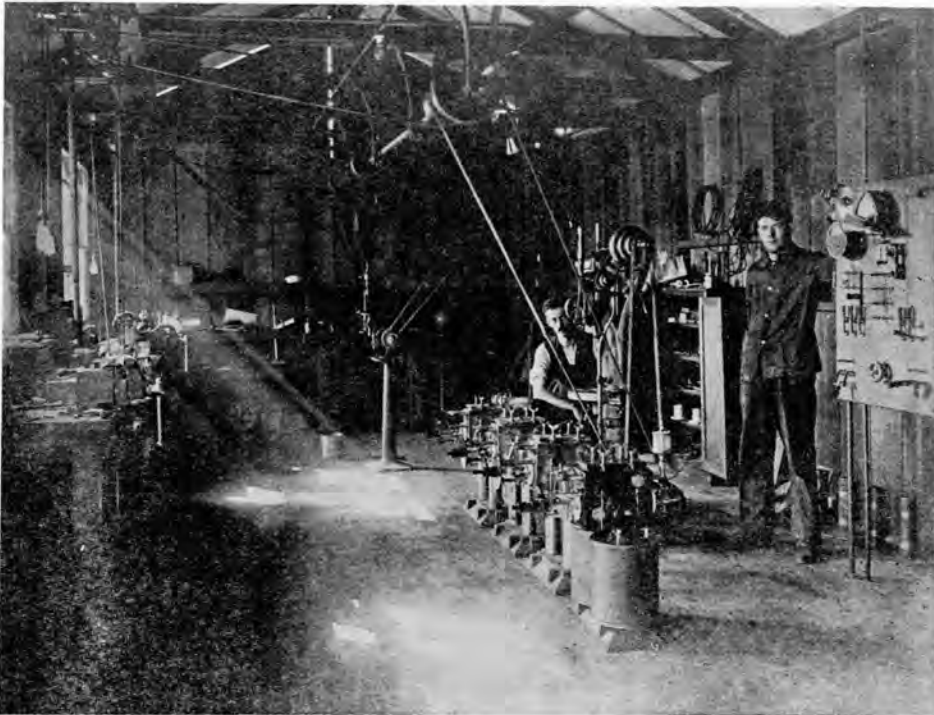
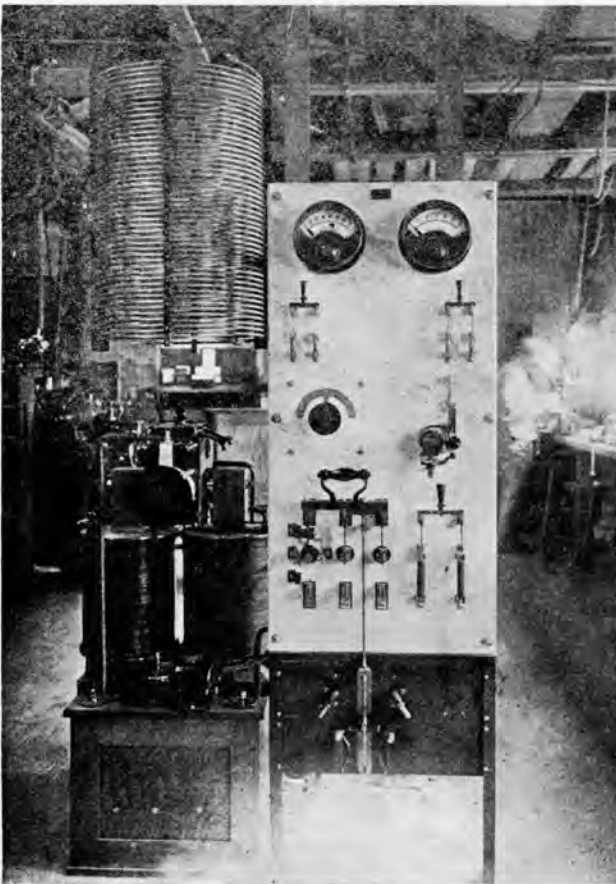


Photo courtesy C. F. Elwell

The first 5-kilowatt Poulsen arcs built in the U.S.A. With new design features incorporated by Federal, these four arc converters were the initial products of the Federal factory, which then occupied a space 15 by 30 feet. Kneeling behind the arcs is C. Albertus, Danish engineer, and to the right is D. Perham, a Federal employee.



Complete 12-kilowatt Federal arc transmitter set up for test at Federal's first factory in Palo Alto, California.

that Dr. Lee de Forest and his assistants discovered the audion amplifier and the vacuum tube oscillator.

Four 5-kilowatt arcs were designed and built at the new plant. These arcs were an improvement over the Danish arcs since they were designed for continuous operation. The Danish arcs would heat up after a short period of operation, making it necessary to turn them off for a cooling period. But the arcs built at Palo Alto were equipped with water-cooling and other devices to make them more rugged, foolproof, and effi-

cient. While the arcs were being built, auxiliary apparatus for the transmitters as well as receivers had to be designed and constructed so that the new factory became a complete plant capable of turning out fully equipped radio stations.

The "Beach Station" at San Francisco

By this time, it was evident that the stations being built could be used for the commercial transmission of messages as well as for demonstrations to prospective investors. With Los Angeles, 340 air miles from San Francisco, already chosen as the site for the fourth station, it was decided to build a more powerful transmitter in San Francisco. A lease was taken on a block of land near Ocean Beach, San Francisco, and on this sand dune two wooden lattice masts, each 300 feet high, were erected. In order to save money, old lengths of cable which had served to propel cable cars along Geary Street in San Francisco were purchased and used to guy the 300-foot masts and support them against the Pacific Ocean gales that often blow along the beach.

This familiar "Beach Station" has since bowed its proud wooden latticework to the progress of

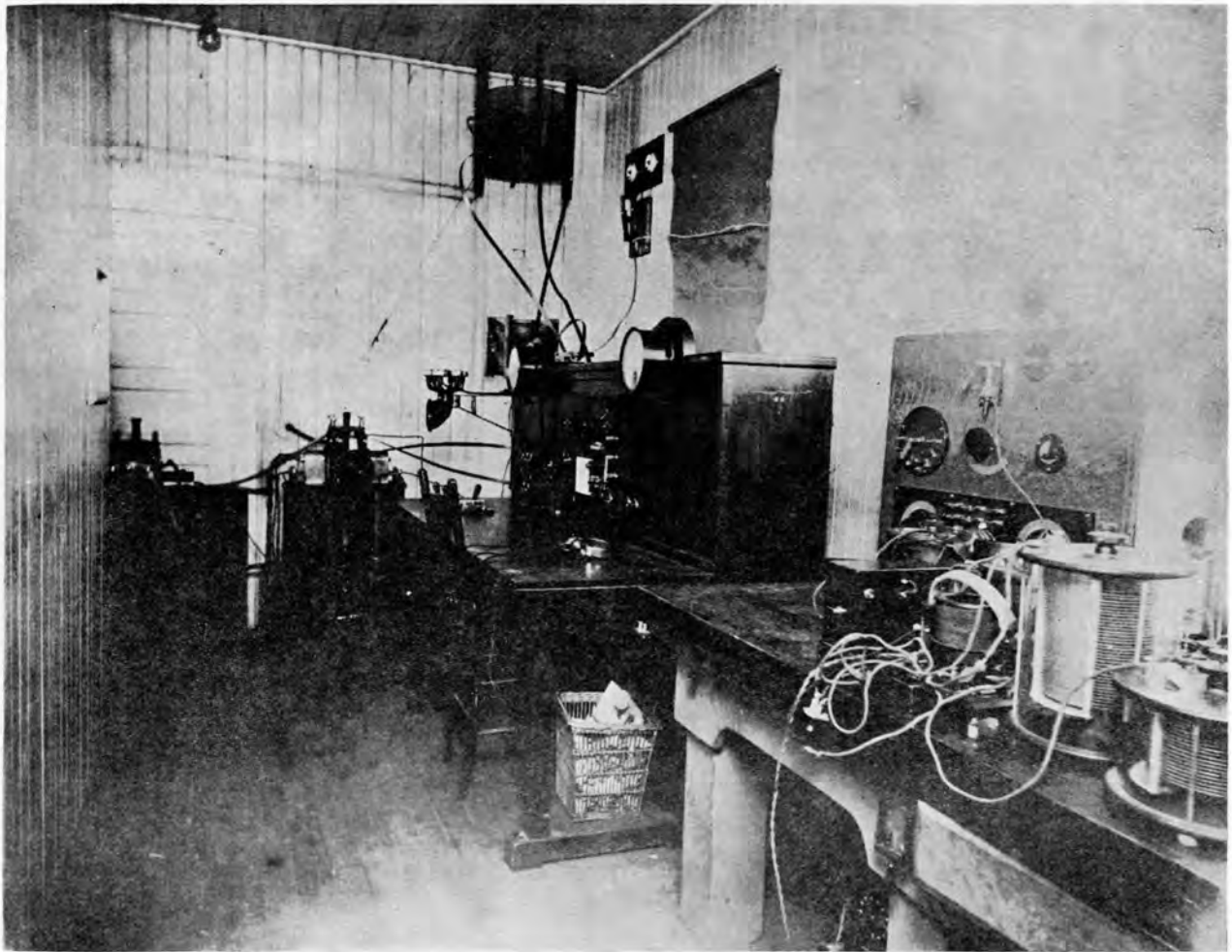


Photo courtesy C. F. Elwell

Interior view of the San Francisco "Beach Station" as it looked in 1909. This photograph shows a side view of the large and rather complex special carbon microphone used to modulate the arc transmitter for radiotelephony.

science. In its day it was a welcoming sight to incoming ships, whose masters used the towers to obtain a "fix" of their position. It also was the first commercial station to upset the notion that radio signals could only be efficiently received and transmitted high above sea level.

In order to cover the distance to Los Angeles, it was also decided to use 12- instead of 5-kilowatt arcs. So the four 5-kilowatt arcs built at the Palo Alto plant were installed in the Stockton and Sacramento stations, in duplicate, and 12-kilowatt arcs were built for San Francisco. It became the practice from then on always to provide a station with duplicate arcs so that one could be cleaned and adjusted while the other was in use.

With the third station in operation, it was possible to prove to skeptics that three stations could transmit simultaneously without interfering

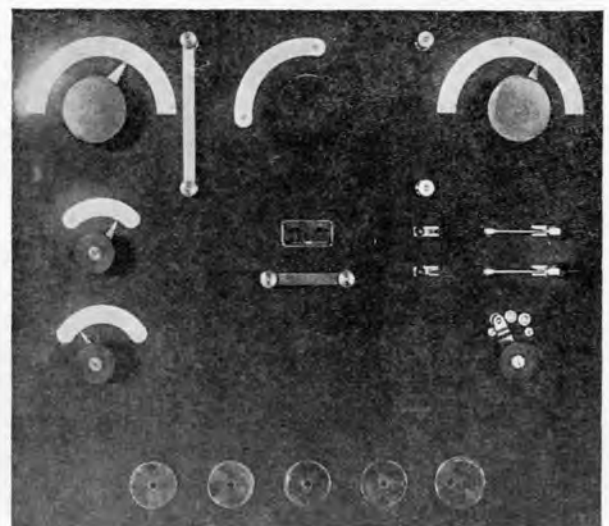


Photo courtesy C. F. Elwell

One of the earliest receiving cabinets built by the Federal Telegraph Company in 1911. The small disks at the bottom were jacks to permit telephones, detector, and ticker to be plugged in.

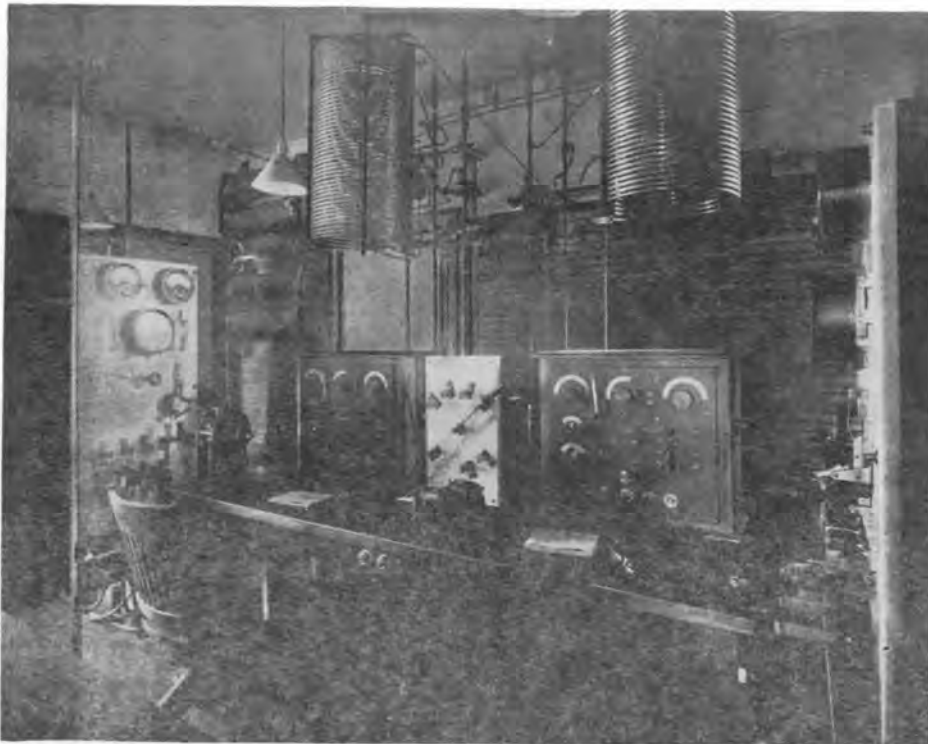


Photo courtesy C. F. Elvell

The Federal Telegraph Company South San Francisco station in 1913. This station was equipped for duplex operation so that two operators could handle messages at the same time. The transmitters were 30-kilowatt arcs.

with one another. It was easy to show that by simply turning a knob a very small amount, Stockton or Sacramento could be heard at will.

The San Francisco station was placed in operation in July, 1910. The demonstrations brought Beach Thompson, another Stanford graduate, to the station. Thompson had recently made a reputation for himself on the West Coast by organizing and financing the establishment of a new electric power line into San Francisco. He became interested in the system and proposed the formation of a new com-

pany with a recapitalization in order to provide working capital for further development.

Poulsen Wireless Corporation

In January, 1911, therefore, the Poulsen Wireless Telephone and Telegraph Company was reorganized and the name was shortened to the Poulsen Wireless Corporation with Beach Thompson as president. Among the principal investors were E. W. Hopkins, George A. Pope, and J. Henry Meyer, all of San Francisco. Poulsen was paid \$500,000 in cash and bonds in the new company for exclusive rights in the United States, including Alaska, Porto Rico, Hawaii, the Philippines, and Cuba. The original board of directors of the new enterprise included the names of Charles D. Marx, S. E. Slade, and Charles R. Bishop.

Almost from the inception of the old Poulsen Wireless Telephone and Telegraph Company, there had been a company set up as a wholly-owned stock company with a capitalization of only \$100,000. Known first as the Wireless Development Company and later as the Federal Telegraph Company, this company had been organized for the purpose of avoiding high taxation in case business was done with states that set

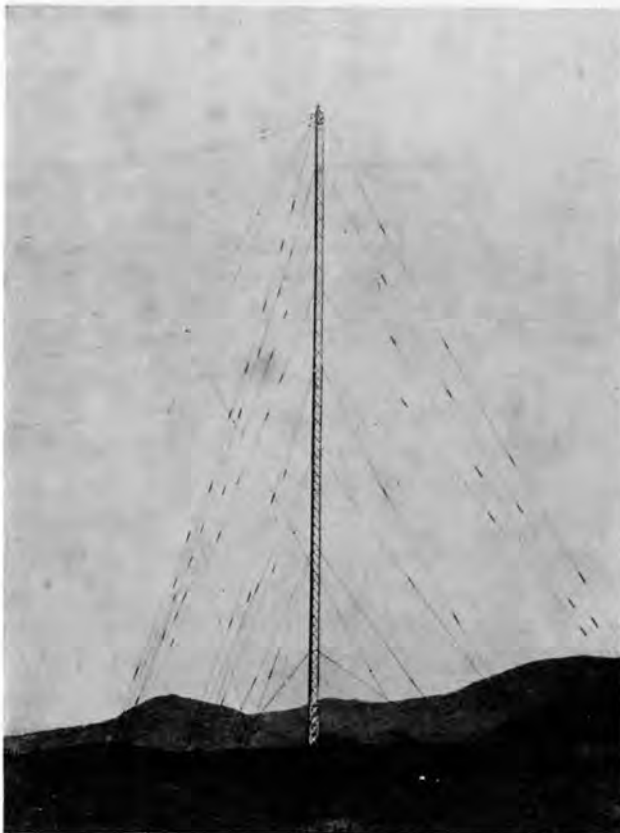


Photo courtesy C. F. Elvell

One of two 606-foot wooden lattice masts erected at South San Francisco in 1913 to permit reliable communication with the Federal station in Honolulu, where two similar masts were in service. These were the tallest wooden lattice masts ever built.



Photo courtesy C. F. Elwell

Interior of the rapid telegraph room at the South San Francisco station. Traffic was handled here at speeds up to 180 words a minute, almost an unheard of speed at that time and a rate not often exceeded today.

their tax rate on the capitalization of the company. Since little or no business had been transacted outside the state of California, the Federal name had not been heard of until the reorganization. With the Poulsen Wireless Company as the holding organization and Federal Telegraph Company as the operating company, all business was transacted through Federal and the Federal name soon became known throughout the world. Poulsen arcs were shortly being called Federal-Poulsen arcs and a few years later Federal arcs.

The first statement issued by the board of directors of the new company was thoroughly conservative and hardly forecast a great future:

The system has been demonstrated by us to be reliable for distances up to 750 miles at any time of day and night in any kind of weather and over land or water. Devices demonstrated by us in the laboratory, but not yet in the field, give promise of far greater distances. Dr. Poulsen, according to our latest advices, is now sending as high as

245 words a minute over land for distances over 900 miles, at any time of day. We have sent 300 words a minute from San Francisco to Stockton, but have not tried the rapid devices for greater distances. We are now talking by wireless telephone between San Francisco, Stockton, and Sacramento, but have not yet installed telephones at greater distances. Dr. Poulsen states, however, that he is able to hear the human voice clearly and distinctly for a distance of 420 miles.

Beach Thompson continued as president of the company until his death some four years later, and in 1915 George A. Pope became the second president.

More New Stations

The Los Angeles station was built in 1911 and Federal opened offices downtown, both there and in San Francisco, to take public messages between the two cities. The first day's income was a little over five dollars, but it increased steadily daily thereafter. Since this service was in direct

competition with the two wire telegraph companies then operating on the west coast, a special rate was established to attract the public. This rate was set as the same for fifteen words and address as the wire companies charged for ten words and address. Also, 50 words and address were accepted for one and a half times the regular rate for ten words for transmission any time during the day at the company's convenience. This was the first day letter rate. Night letters carried 75 words and address for the same price as ten-word telegrams.

Because of the success of this communications business, it was decided to push service to the north and to the east. Stations were built in rapid succession at Portland, Seattle, El Paso, Fort Worth, Kansas City, and Chicago. In Chicago, the 26-story Transportation Building was used to support the station's 80-foot steel masts and the transmitter was installed on the twenty-second floor.

Atmospherics caused a great deal of trouble, especially in the daytime. To improve the speed and reliability of daytime service, two relay stations were built, one at Medford, Oregon, and one at Phoenix, Arizona. These stations also provided additional centers for business. At night, it was usually possible to skip the relay stations and work longer distances directly, such as between San Francisco and Kansas City. By 1912, 14 of these stations in the U. S. A. were competing with the wire telegraph companies. They communicated regularly over distances of 500 miles in the daytime and 1000 miles at night. Those were great distances then and demonstrated decided progress.

The Honolulu Station

At this time, the cable rate from San Francisco to Honolulu and Manila was 35 cents and \$1.08 a word, respectively. It was determined that

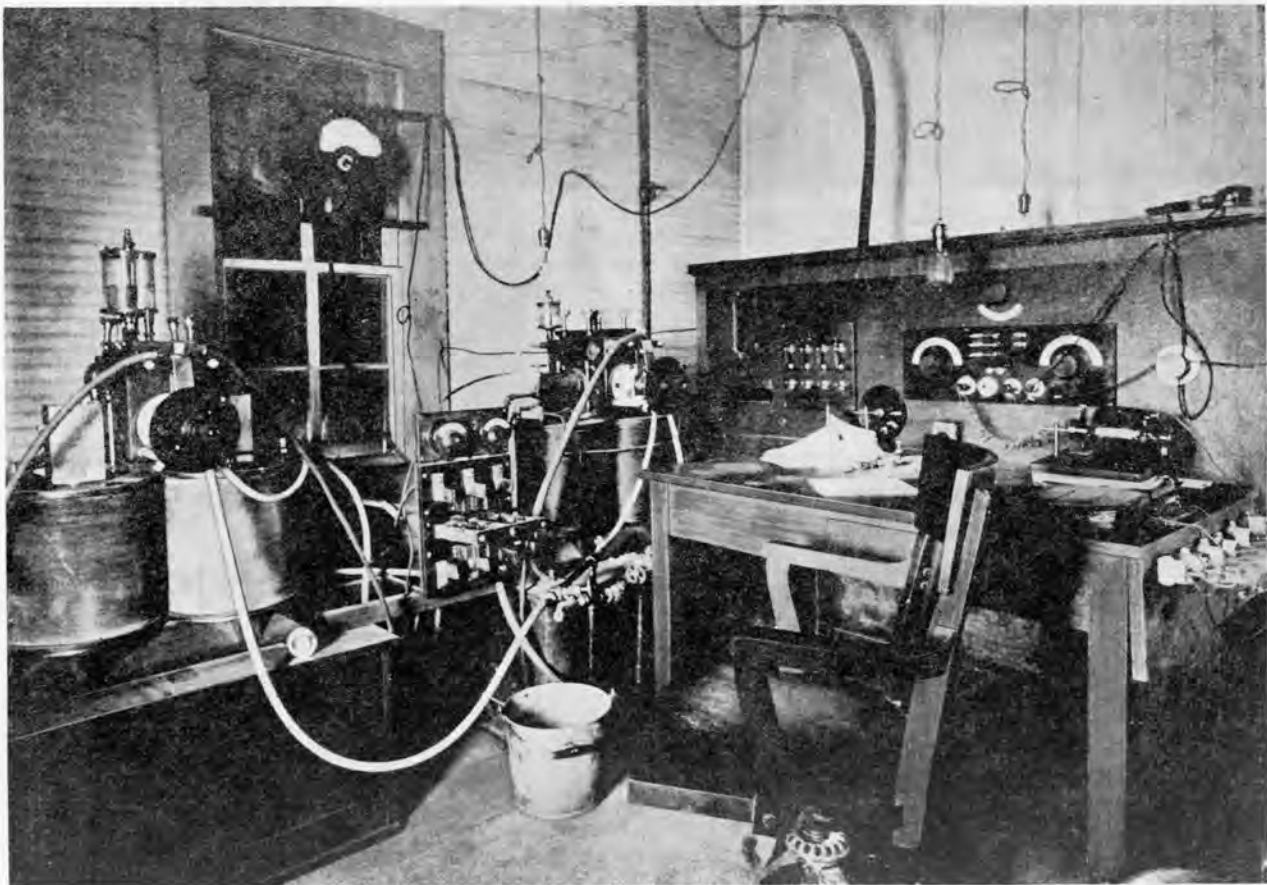


Photo courtesy C. F. Elwell

Operating room of the Federal 12-kilowatt station at Fort Worth, Texas, as it looked in 1912. Although the operating table closely resembles the first one built by Federal, no large-sized microphone was included as the original application of the arc to telephony had been superseded by the more pressing commercial demands for telegraphic communication.

actual cost of transmission between Honolulu and San Francisco would not be much greater than, say, between Chicago and San Francisco, for which an average of three cents a word was received. The board of directors of Federal, presented with these facts, provided the funds to build a Honolulu station and also to construct a larger station at San Francisco. Work on this project was expedited when it was discovered that the rival radio company, still using spark transmitters, was planning to build a big station in Honolulu.

As soon as this last fact was known, Federal lost no time in getting its chief engineer to Honolulu to erect the new station there. In fact, since no cabin was available on the next boat, he was accommodated in the officers' quarters. This great haste was reasonable enough, because in those days, once a high-power radio station was built, no one else would be foolish enough to build another station within many miles of it.

Federal had not previously erected any masts higher than 300 feet nor employed power greater than 12 kilowatts. At that time it was understood that the radiated power increased with the square of the height of the antenna and also with the square of the number of antenna amperes. So it was decided to quadruple the radiated energy by raising the mast height to 440 feet and by increasing power to 30 kilowatts.

A 2400-Mile Station in 47 Days

With the aid of two riggers from San Francisco and 25 Chinese and 25 native laborers, the Honolulu station was completed in May, 1912, 47 days after work was started. The new, more-powerful San Francisco station, located at South San Francisco in order not to be too close to the old station at Ocean Beach, had been placed in operation before the Honolulu station was started. Night communication between the two stations, a distance of approximately 2400 miles, was good, but daylight signals were not always reliable because of the prevalence of atmospherics.

An office was opened in Honolulu in competition with the cable company and the 35 cent-per-word cable rate was reduced to 25 cents. The press rate of 16 cents a word was reduced to two cents a word and a contract entered into with the local Honolulu newspaper for a minimum of



Photo courtesy C. F. Elwell

The Chicago station of the Federal Telegraph Company was located on the 26th floor of the Transportation Building. Two steel masts, illustrated in the above photograph taken in 1913, were built atop the building to support the antenna system.

1500 words a day. Previously, 120 words daily was the maximum of outside world's news received by the islanders.

To increase the strength of the daylight signals and improve reliability, 606-foot masts were later erected at both the Honolulu and San Francisco stations, and power was raised to 60 kilowatts.

Dr. Lee de Forest Heads Research

While these stations were being set up and more and larger arcs were being designed and installed, other developments took place in the tiny laboratory in Palo Alto that were destined to have a sweeping effect on wire telephony as well as radio communications. In July, 1911, Lee de Forest, inventor of the three-element vacuum

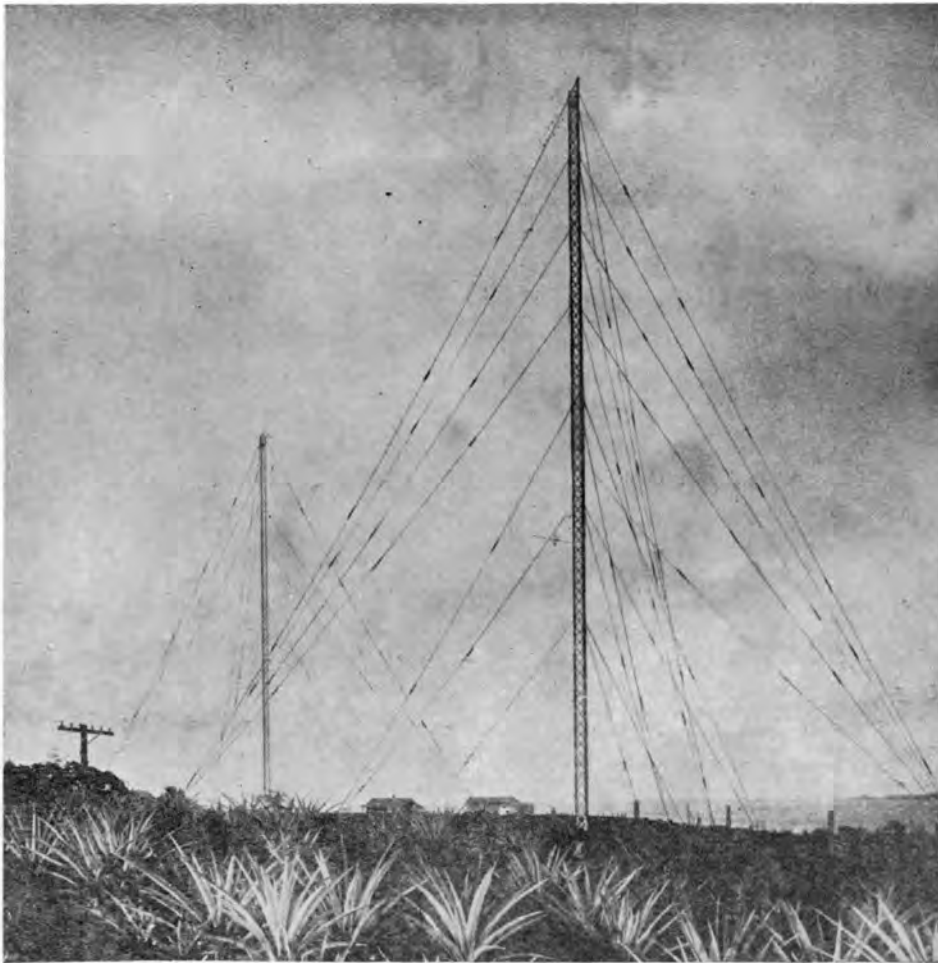


Photo courtesy C. F. Etwell

Federal Honolulu station showing buildings and the two 606-foot wooden lattice masts as they appeared in August, 1912.

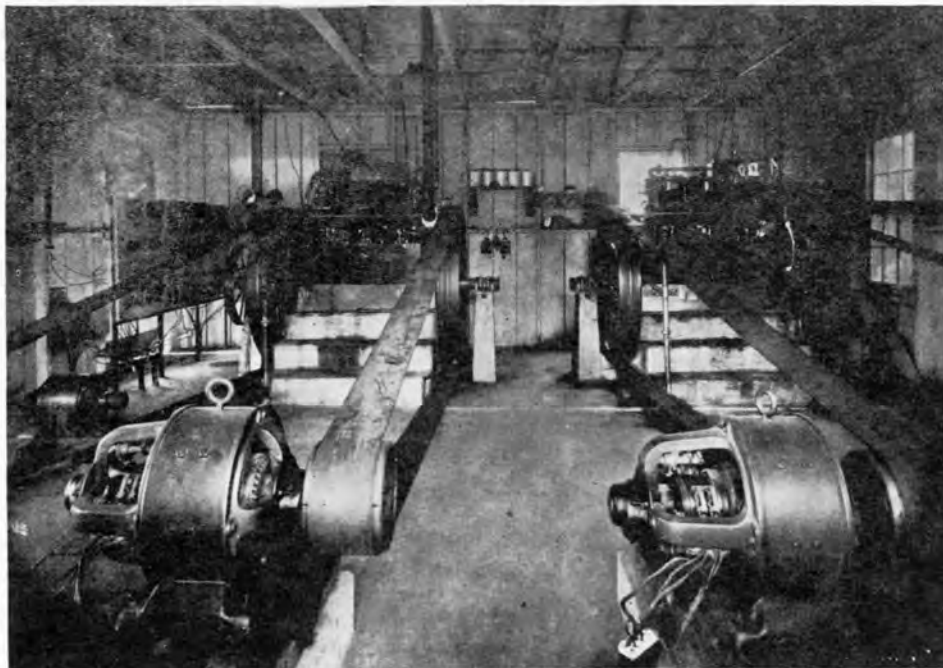


Photo courtesy C. F. Etwell

Power plant for the Honolulu station showing the relatively huge gasoline engines used to drive the direct-current generators for the arc converters.

tube he called the audion, became head of the research laboratory. A radiotelephone company de Forest had organized in San Francisco had failed and Federal bought up some of de Forest's equipment and made him a member of the laboratory staff.

Dr. de Forest had been employed specifically to attempt to develop a satisfactory vacuum tube detector for arc reception. The old-fashioned ticker was still in use then and it was never a too-efficient instrument. The first audions were purchased from MacCandless of New York, at the time the only manufacturer of three-element vacuum tubes. Later, a firm in Oakland began their manufacture to de Forest's specifications.

C. V. Logwood—the Practical Experimenter

When de Forest was made head of research at the Federal Laboratory, he was assigned a young man by the name of C. V. Logwood as his assistant. Logwood had been an amateur radio experimenter. He had not had much technical education, but he was a born experimenter. His first achievement at the laboratory was to

design a rotary ticker-detector the cost of which was a fraction of that of the elaborate, gold-wire, vibrating type brought over from Denmark. Logwood simply roughened the pulley of a \$1.25 toy electric motor and arranged a small piece of steel wire so that it bore on the roughened groove. The result was a ticker which gave stronger and better sounding signals than the much more expensive type then in use.

At first the differences between the two men—de Forest a doctor of philosophy from Yale, and Logwood a practical experimenter of the type so common in America, but with little formal education—caused some friction. These differences soon ironed themselves out, however, and together, in the Federal laboratory, they made two of the most important discoveries of their time and, even after they left Federal, they worked together and filed numerous joint patents.

Invention of the Audion Amplifier

In August, 1912, Logwood, while experimenting with the de Forest audion, hooked three stock Federal PN audion detectors in cascade, each connected to separate filament and plate batteries. With a microphone in the input of the first unit and a pair of headphones hooked up to the last unit, the ticks of a watch placed in front of the microphone were amplified so that the headphones reproduced them loud enough to be heard all over the room. It was even possible to hear a fly walking on a piece of drawing paper placed before the microphone. This was the first application of the audion, or three-element vacuum tube, as an amplifier.

In September, 1912, Federal sent the first self-contained three-stage amplifier to Washington, D. C., to demonstrate it to the U. S. Navy. This amplifier incorporated the three audions in a single box with suitable switches, resistors, transformers, etc., with the plate battery inside and with terminals for a single external battery to light the filaments. Dr. Louis Austin, then head of the U. S. Naval Radiotelegraphic Laboratory, took the amplifier to the Bureau of Standards and measured its amplification. With the crude methods available at the time, amplification was calculated to be 120 times.



Photo courtesy C. F. Elwell

Three-stage de Forest audion amplifier of the type first built by Federal in 1912. This is the earliest known commercial cascade audio-frequency amplifier and is the type demonstrated to the U. S. Navy in September, 1912. At that time, tests made by Dr. Louis Austin, then head of the U. S. Naval Radiotelegraphic Laboratory, indicated the amplifier increased the signal intensity by 120 times.

Discovery of the Audion Oscillator

While experimentation was progressing on the amplifier, another engineer by the name of van Etten, who was working with de Forest and Logwood, noticed that the audions had an annoying tendency to produce unwanted squeals in the headphones. Further investigation of the phenomenon by de Forest revealed that the audions were oscillating and producing not only audible squeals but inaudible radio frequencies as well. In fact, when an audion was hooked up in the laboratory with capacitance and inductance like a Poulsen arc, it generated undamped oscillations identical to the oscillations from the arc. The audion oscillator, moreover, had two important advantages over the arc. It could be made to operate on power down to a fraction of a watt while the smallest Poulsen arc capable of satisfactory operation consumed at least 100 watts. Also, the audion could be operated at much

higher frequencies than the arc and with greater stability.

In a sense, then, it may be said that the arc actually spawned its own successor. For, while arc transmission enjoyed a position of pre-eminence in radio for over twenty years, it has now been replaced by the vacuum tube transmitter. Actually, this accidental discovery of the vacuum tube as an oscillator and the invention of the vacuum tube amplifier may be said to have started a whole new division of science now known as electronics, since most vacuum tubes in use today are employed either as oscillators or amplifiers. Fortunately, van Etten kept notes on the experiments; for, when the whole question of patent rights to these inventions came up later in the courts, it was his notes that established the fact that the original work was done in the Federal Telegraph Company's Palo Alto laboratories in August, 1912.

Audion Amplifier Aids Telephony

In October, 1912, de Forest took the audion amplifier to New York and demonstrated it to officials of the American Telephone and Telegraph Company. Telephone engineers had been seeking such a device for years to extend the distance a telephone conversation could travel over open-wire lines. The limit then was about 900 miles. Early in 1913 the Telephone Company bought the wire telephone rights to the amplifier from de Forest and later it purchased the telegraph rights. In subsequent litigation, the courts decided that Federal was to retain the shop rights in this invention because of the development work done in its laboratory.

The fact that Federal kept the shop rights in these basic de Forest patents was of great importance to the company after World War I when the vacuum tube became so important in radio broadcasting, high-power transmission on short wavelengths, and the construction of amplifiers for loudspeaker operation. When the Radio Corporation of America was formed shortly after the war for the purpose of pooling the patents of a number of communications companies, the American Telephone and Telegraph Company turned the de Forest patents into the Radio Corporation pool. The Federal Telegraph Company was, therefore, for a number of years the

only company in the United States outside of the Radio Corporation group in a position to supply equipment in all fields of radio and other phases of electrical communication based on these fundamental and controlling de Forest patents.

U.S. Navy Adopts Federal Arcs

The year 1912 was an eventful one in Federal's history. That was the year when the company had established itself in the communications business with radio stations as far east as Chicago and with a station in Honolulu. It was the year when the laboratory in Palo Alto was the scene of two epoch-making developments in radio: the audion oscillator and the audion amplifier. And 1912 was also the year when the United States Navy officially adopted the Federal arc.

When Federal's chief engineer took the audion amplifier to Washington in September, 1912, he saw Admiral Hutch I. Cone and requested permission to demonstrate a Federal arc to the Navy Department. The Navy had then just completed its new 100-kilowatt spark station at Arlington, Virginia. This station had taken three years to build and was considered the last word in radio equipment with its one 600-foot and two 450-foot self-supporting steel antenna towers. The navy had tested all the various types of spark systems then available and had finally decided on the 100-kilowatt Fessenden transmitter.

Had Federal not successfully established its 2400-mile circuit between Honolulu and San Francisco, a prestige-making feat in days when a jump of 1000 miles was considered unusual, the Navy might not have considered the arc. After all, the Navy officials were naturally very pleased with their brand-new 100-kilowatt Arlington spark station which they considered the most up-to-date high-powered radio equipment available. As it was, Admiral Cone reluctantly granted permission to a test of the arc at Arlington, but he also issued a proviso "not to put any nails or screws in the floors, walls, or ceilings of the station." Dr. Austin was openly skeptical of the performance of the arc when he heard that the 30-kilowatt transmitter planned for the demonstration would put only about fifty amperes into the antenna. "What is the use of fifty," asked Dr. Austin, "We have over a hundred." When it was pointed out that Federal considered an

ampere of continuous waves worth two amperes of damped waves, Austin replied, "Rubbish, an ampere is an ampere the world over."

To comply with Admiral Cone's injunction not to mar the new Arlington station in any way, a wooden frame eight feet long, eight feet high, and four feet deep was built. In this frame was suspended all the apparatus necessary for the 30-kilowatt arc. Next to the huge Fessenden spark transmitter, the arc transmitter looked small and ridiculously uncomplicated.

Arlington to Honolulu in One Hop

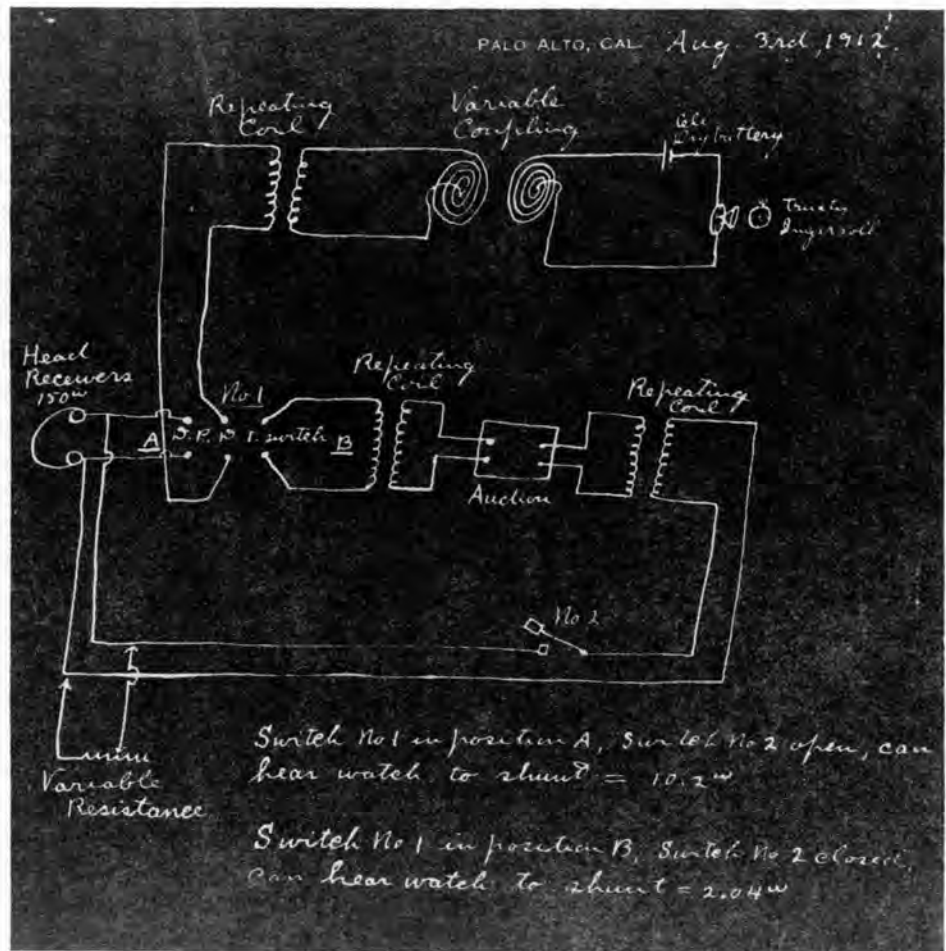
The day the arc was installed (December 8, 1912), communication was established between Arlington and Federal's South San Francisco station. This was considered phenomenal by officials of the Navy since, up to that time, the Navy had not succeeded in contacting its Mare Island station in California, almost the same distance. The following night, messages were exchanged between Arlington and Federal's Honolulu station, a distance of 4500 miles and a record for that time, especially since, during the period of transmission, Honolulu was still in daylight.

Arc Proved Superior to Spark

Dr. Austin insisted that more scientific tests be arranged to compare the relative performances of the 30-kilowatt arc and the 100-kilowatt spark, so the arc was rented by the Navy for further study. He first arranged audibility tests at Key West, Florida, where, in spite of the fact that the

arc was radiating only one-quarter of the energy transmitted by the spark, signal strengths of both transmitters were equal. Later tests at Colon, Panama Canal Zone, yielded significant results inasmuch as the messages sent with the arc were received through the heavy tropical static while those from the spark were not. During this period, the cruiser *Salem* travelled as far as Gibraltar in order to compare the two systems thoroughly.

While tests on the arc were in progress, Dr. Austin also had an opportunity to make comparative tests of Federal's receiving equipment against the receiver then in use at Arlington. The official Navy receiver at that time was the IP76 and Naval radio experts considered it the last word in radio receivers. However, in audibility tests, Dr. Austin found that the Federal receiver



Circuit of the first experimental audion amplifier as developed under the direction of Dr. Lee de Forest in Federal's Palo Alto laboratory in 1912. This diagram served as an important document when the question of patent rights to the invention of the amplifier came up later in the courts. It helped establish the fact that the prior work was done in Federal's laboratory which subsequently won for Federal the shop rights to the invention.

provided from 2.8 to 4.6 times as much energy as the IP76. Thus, Federal not only had a superior transmitter in the arc, but it also proved to be ahead in the design of receiving sets.

U.S. Navy Installs High-Power Federal Arcs

Following these tests, the United States Navy ordered a 100-kilowatt arc for installation at Darien, Panama Canal Zone. Along with the arc transmitter, the Navy also purchased Federal ticker receivers, equipped with oscillating audions for the shorter-wave work. This equipment was installed in 1913, thus making the United States Navy the first in the world to adopt continuous-wave transmission. In quick succession, the Navy purchased 350-kilowatt arc transmitters for stations at Pearl Harbor, Hawaii, and Cavite, Philippine Islands. The Federal arc converters for both these stations were of the oil-immersed, water-cooled type capable of furnishing 350-ampere antenna current continuously. These arcs looked like small vertical power-station generators. They were nine feet two and a half inches tall, seven feet four inches wide, and twelve feet long. Each magnetic field weighed 65 tons. A smaller station of 200 kilowatts capacity was also installed at San Diego, California, to work with the two Pacific stations. Some idea of the confidence the Navy had in the ability of the arc to work long distances may be gathered from the mileages between the stations. The distance from Cavite to Pearl Harbor is 5300 miles, from Pearl Harbor to San Diego 2600 miles, and from Cavite to San Diego 7800 miles.

Federal Inaugurates Ship-to-Shore Service

In 1914, the Federal Telegraph Company entered the marine radio field by inaugurating a ship-to-shore service and manufacturing radio equipment for installation on ships. This service was introduced at San Francisco and, for the first time, ships plying between San Francisco and Honolulu were able to secure daylight communication practically anywhere between these points. In 1921 and 1922 the service was extended by the establishment of coastal stations at Los Angeles, California, and Portland, Oregon.

During the years that followed the adoption of the arc by the Navy until the United States

entered World War I in 1917, the Federal Telegraph Company devoted most of its manufacturing efforts to providing radio equipment for the United States Navy. Since so many of the transmitters were 60 kilowatts or over with arc converters weighing as much as 85 tons, the plant was moved to a new site in Palo Alto close to a railroad siding. The small group of employees had, by this time, grown from about a dozen to over 200.

A 1000-Kilowatt Arc Station

It was during this period that the U. S. Navy Department set up a comprehensive radio system all over the United States and its possessions. In addition to the four Navy stations previously mentioned Federal arc stations were built and placed in operation at Sayville, Long Island; Tuckerton, New Jersey; Annapolis, Maryland; Guam; and Porto Rico. After the United States entry into the war, the U. S. Navy ordered two 1000-kilowatt arc converters for installation at Bordeaux, France, with a view to supplementing the existing means of communication between France and the U. S. A. This was the famous Lafayette Station, the most powerful radio station ever built. Installation by Federal engineers was begun in 1918, but the Armistice halted work for a while until negotiations were made for the French Post Office to operate the huge station. It was finally completed and opened in December, 1920, and arcs were used until 1936 when the station was converted to vacuum tube operation.

Operating Innovations

By 1917 the Federal Telegraph Company's chain of radio stations along the Pacific Coast was doing such good business that duplex circuits were set up between Los Angeles and San Francisco. These circuits permitted transmission of two messages between two points simultaneously. Also, one-way "break" systems were set up between Los Angeles and San Diego, Los Angeles and Phoenix, and San Francisco and Honolulu. The break system permitted the receiving operator to break in on the transmitting operator whenever an error occurred or, for some other reason, continuity of reception was interrupted.

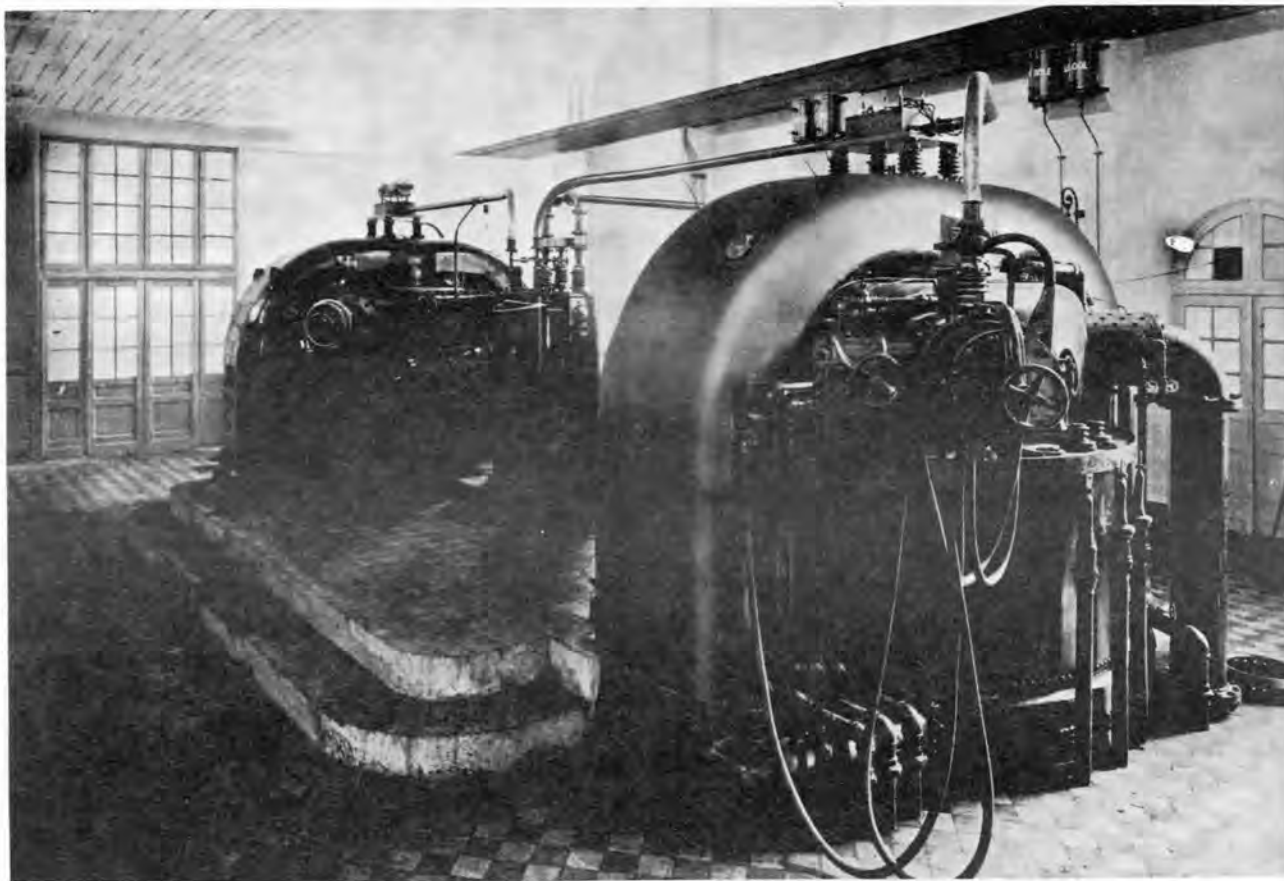
At most places, the Federal Telegraph Company receiving station was located at a central point in the city being served and the transmitter, usually on the outskirts of the city, was operated by remote control from the receiving office over leased wires.

Operating innovations such as duplexing and break systems were only a few of the many ingenious methods employed by Federal to simplify and speed the handling of messages. As early as 1913, Federal installed Wheatstone, tape-operated, Brown relay keying between San Francisco and Los Angeles. Messages could be sent at 80 words per minute and were received on the Telegraphone, another Poulsen invention, which permitted recording of sound on a rapidly moving steel wire. After the signals were recorded, the wire was run at a slower speed so that the operator could transcribe the message directly on his typewriter. The Federal audion amplifier made this development possible.

U.S. Navy Purchases Federal Radio Stations

When the United States entered World War I, the Navy for security purposes took over all of Federal's stations. Much of the equipment was subsequently transferred to military bases throughout the world and Federal engineers were drawn upon by the Navy to supervise the installation and operation of these stations.

The Government paid \$1,600,000 in Liberty Bonds for the radio stations and virtually all of the company's domestic patents, the company retaining, however, the Palo Alto manufacturing and engineering unit and its foreign rights. With the money, a long-standing indebtedness amounting to about \$600,000 was cleared up. At the time, Washington Dodge was president of the company, but shortly after he was succeeded by R. P. Schwerin. The new capital permitted the company to expand its manufacturing facilities, and, throughout the war, Federal was one of the



Historic Lafayette radio transmitter station built by the Federal Telegraph Company for the United States Navy near Bordeaux, France, during World War I—the largest transmitter ever built. The illustration shows the two 1000-kilowatt Poulsen arc generators which permitted efficient and reliable communication across the Atlantic Ocean.

principal suppliers of radio equipment for the Navy and Maritime services. With increased plant and personnel, Federal responded to the call by the mass production of radio equipment serving the Emergency Fleet—the equivalent of today's Victory Fleet. Thus it may be said that Federal's products contributed substantially to the supremacy of the Allied Nations in World War I.

After hostilities were ended, the Government restored to Federal all of its patent rights. A new system of radio stations was built under the direction of Haraden Pratt who was then acting chief engineer. Since the company also had managed to continue its commercial message service through its wire-leasing arrangement with the Pacific Telephone and Telegraph Company during the time that the Government operated Federal's radio stations, its position was better than at any previous time.

Frederick A. Kolster Heads Research

In 1921, Frederick A. Kolster joined Federal as chief research engineer. From 1912 to 1921 he had served as radio specialist at the United States Bureau of Standards and was chief of the radio section which he organized. While at the bureau, he attained recognition for his invention of the Kolster Decremeter, widely used by the Radio Inspection Service and others for determining the wavelength and logarithmic decrement of radio transmission, primarily from ships, as required by government regulations established for the purpose of promoting safety at sea.

Kolster also made another important contribution to safety at sea when, in 1913, he prevailed upon the Bureau of Lighthouses to establish radio beacons at all important lighthouses and lightships. As a result, the first experimental radio beacons were installed by Kolster on the Ambrose and Fire Island lightships and at the Sea Girt lighthouse on the New Jersey coast.

Kolster had been employed specifically for the commercial development of his radio compass or direction finder which had been used by the United States Navy during the first world war as one of that conflict's "secret weapons." Kolster's direction finder remedied the faults of older systems. The Kolster system for pick-up purposes utilized a multiple-turn loop or coil antenna

which could be rotated about a vertical axis. In this way, by revolving the loop for maximum signal strength, bidirectional results could be obtained. Kolster also used a loop in conjunction with an antenna to obtain a unidirectional bearing. The latter was based on the maximum signal strength and was rather broad. The bidirectional signal gave the accuracy, and the unidirectional signal the information as to whether transmission was coming from front or rear. The unidirectional feature was an improvement over previous systems.

This new-type loop had greater pickup than previous systems and, when used with a vacuum tube receiver, its directional sensitivity was greatly improved. Installed on shipboard, the radio direction finder provided a means of determining the bearing of any radio beacon or of a radio-equipped ship lost in fog or in distress.

Federal Builds First Commercial Radio Direction Finder

Through Kolster's efforts, a commercial radio direction finder was developed and manufactured. This was the first radio direction finder to be installed on commercial ships. Federal thus introduced to the maritime world a simple and effective method of utilizing radio as a navigational aid. The radio compass or direction finder devised was, when it was introduced, described by the United States Commissioner of Lighthouses as the most important nautical invention since the magnetic compass. Today, a radio direction finder is an important piece of navigational equipment on almost every ocean-going vessel, and special radio compasses and direction finders developed and manufactured by Federal for the United States Navy were strategic "secret weapons" of World War II, just as the Kolster direction finders were in the previous war.

Contract with China

In January, 1921, the Federal Telegraph Company entered into a contract with the Republic of China for the construction of high-power radio stations at Shanghai, Harbin, Canton, and Peking for a contract price of \$13,000,000. The original contracts provided for 1000-kilowatt and 60-kilowatt arc stations at Shanghai, 200 kilowatts at Harbin, and 60 kilowatts at Peking

and Canton, but a supplementary contract, drawn up September 15, 1922, provided for secondary stations of 100 kilowatts capacity instead of the 60-kilowatt stations at Shanghai, Peking, and Canton, and a second 200-kilowatt station at Harbin. Japanese opposition, however, prevented completion of the contract.

The 1000-kilowatt arcs were to be constructed from castings made during World War I for a station to be built in North Carolina to communicate with the Lafayette Station, then under construction in France. The North Carolina project was cancelled with the signing of the Armistice on November 11, 1918, and the castings were stored at Federal until the China contract was negotiated, when actual assembly was begun on them.

A photograph of the two castings nearing completion in the Federal factory at Palo Alto, California, is shown in the frontispiece. The photo was taken in 1921 before it became evident that the Chinese contract would not be consummated.

Federal Aids Cyclotron Development

These giant magnetic field pieces were stored at Palo Alto for a number of years while developments destined to have an important effect on World War II were taking place at the University of California in Berkeley. It was here that Dr. Ernest O. Lawrence was experimenting with early cyclotron models which later proved so important in the atom-smashing technique that led



Kolster radio position finder; the first practical radio direction finder for shipboard operation, developed by Frederick A. Kolster at the Federal Laboratories in 1921 and manufactured by Federal. At the left is shown the loop compensator mechanism as attached to the standard ship's binnacle. The rod at the top supported a square rotatable loop antenna located above deck. The vacuum tube receiver employed with the direction finder is shown at the right.

to the discovery of atomic energy secrets.

Dr. Lawrence's first models were tiny compared to the huge cyclotrons later successfully used to smash the atom. Since Federal was a pioneer in the electronic field, and the cyclotron was essentially an electronic device, Dr. Lawrence turned to Federal engineers in the mid-twenties for help in constructing the magnetic circuits for his preliminary experiments.

As a result of these first contacts, Federal was quick to appreciate Dr. Lawrence's problem in obtaining the massive magnets necessary for work on a larger scale and consequently donated the 65-ton castings intended for the China station to the University of California. Federal also wound the new field coils under Dr. Lawrence's

direction. The cyclotron thus built from former Federal arc components was actually the first successful cyclotron. When completed it weighed 80 tons. A photograph of the cyclotron in operation at the University of California is shown in the frontispiece.

So perfect were the magnetic fields of Federal arcs for this purpose, that other old high-power arcs, when they were retired from use as radio transmitters by modern vacuum tube equipment, found their way to the physics laboratories of various universities where they made important contributions to the progress of science. Thus, the powerful arc transmitter built by Federal for the U. S. Naval Radio Station at Annapolis, Maryland, when it was dismantled after years of successful operation, was turned over to Dr. Joseph R. Dunning of Columbia University for the cyclotron constructed at the Michael Pupin Laboratory there. It was at this laboratory that the theories of Dr. Lise Meitner were first tested and verified by Professors Niels Bohr and Enrico Fermi. These experiments were the first step in the fabulous Manhattan En-

gineering Project which finally led to the development of the atomic fission bomb.

Federal Becomes Sole Operating and Controlling Company

A second reorganization of the company took place in 1920 when the stockholders ratified a plan of recapitalization to reduce a topheavy debt structure created in the original organization of the Poulsen Wireless Corporation in 1911. Under the presidency of R. P. Schwerin, the capital stock liability of the Poulsen Company was liquidated by exchanging Federal Company stock for Poulsen stock. The effect of this procedure was to produce a new capitalization of \$2,500,000 and to eliminate completely the former Poulsen Wireless Corporation, the Federal Telegraph Company becoming the sole operating and controlling company.

In 1925, Federal entered the field of manufacturing and selling radio broadcast receiving sets which had been designed by its chief research engineer, Dr. Kolster. The new receivers were sold as Kolster Radios, and in a relatively short time they became the third largest factor in this branch of the radio manufacturing business in the United States.

Federal Expands to East Coast

At the time of the introduction of the Kolster Radio receivers, the Federal plant in Palo Alto was in no way sufficiently equipped to meet the constantly developing demand. Federal, therefore, sought an eastern manufacturing organization capable of producing receivers in sufficient quantity with the quality called for by the high-class field to which the receivers catered.



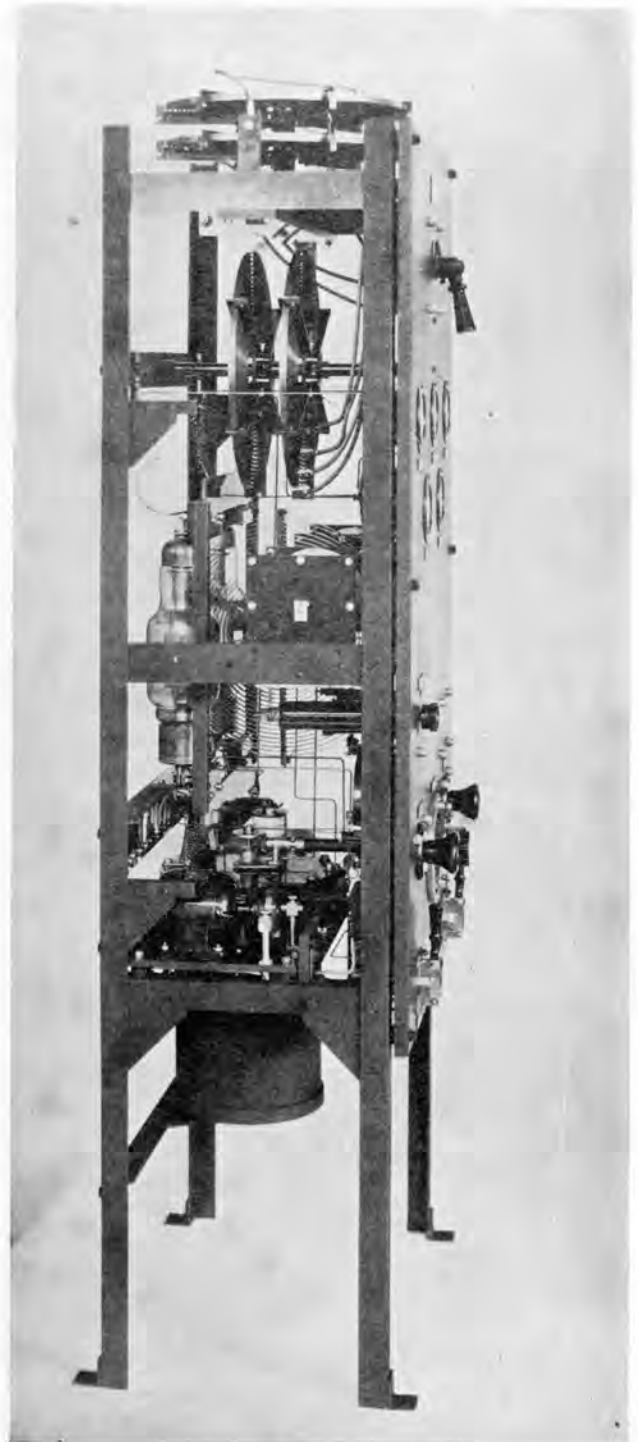
Typical ship installation of a Federal Telegraph Company 2-kilowatt arc transmitter.

This organization it found in the Brandes Companies of New Jersey, a group of manufacturing, engineering, and selling units which had been organized in 1908 and which enjoyed an enviable prestige in the radio trade. The Brandes business had been built up almost entirely around the radio headset which, with the development of the de Forest vacuum tube as an amplifier and the loudspeaker made possible by it, had rapidly declined in popularity, leaving the Brandes Companies in possession of large and fully developed manufacturing facilities and a vanishing volume of business.

Manufacture of Kolster Radios was forthwith begun at the Brandes plant located in Newark, New Jersey, and a merger, based on an exchange of stock, was arranged. The new company formed, named Federal-Brandes, Inc., operated as a holding company for the Federal Telegraph Company and for the combined Brandes companies, thus effecting a union of two of the oldest radio companies in the country, having at its outset a fully developed business with manufacturing plants located at Newark, New Jersey; Palo Alto, California; Toronto, Canada; and Slough, England. In 1928, the name Federal-Brandes in the U.S.A. was changed to the Kolster Radio Corporation. By 1930 the status of radio set sales to the public had become so unstable, and so much of the plant capacity was being devoted to provide equipment for the expansion and modernization of the Mackay System, that it was decided to discontinue the manufacture of Kolster radios in the U.S.A. and to concentrate on the manufacture of vacuum tubes, radio transmitters, and navigational equipment.

Federal Joins Mackay System

In 1927, Federal took one of its most important steps forward when it completed a twenty-one year contract with the Postal Telegraph-Commercial Cables group, which comprised the Mackay System. By the terms of the new contract, the Federal Telegraph Company agreed to devote its patents, manufacturing, and engineering facilities to supplying the Mackay companies with whatever they needed to begin at once a land and ocean radio service on a parity with existing competition. As a first step toward aiding Mackay in the immediate inauguration of a



Early 500-watt vacuum tube radiotelegraph transmitter manufactured by Federal in 1926.

radio service, Federal sold outright to that company its Pacific Coast point-to-point radio communication system, comprising the entire operating communication interests of the original Federal Telegraph Company. Under these arrangements the Federal Telegraph Company



Radio Beacon Type CM-1530, developed by Frederick A. Kolster. It was manufactured by the Federal Telegraph Company in 1927.

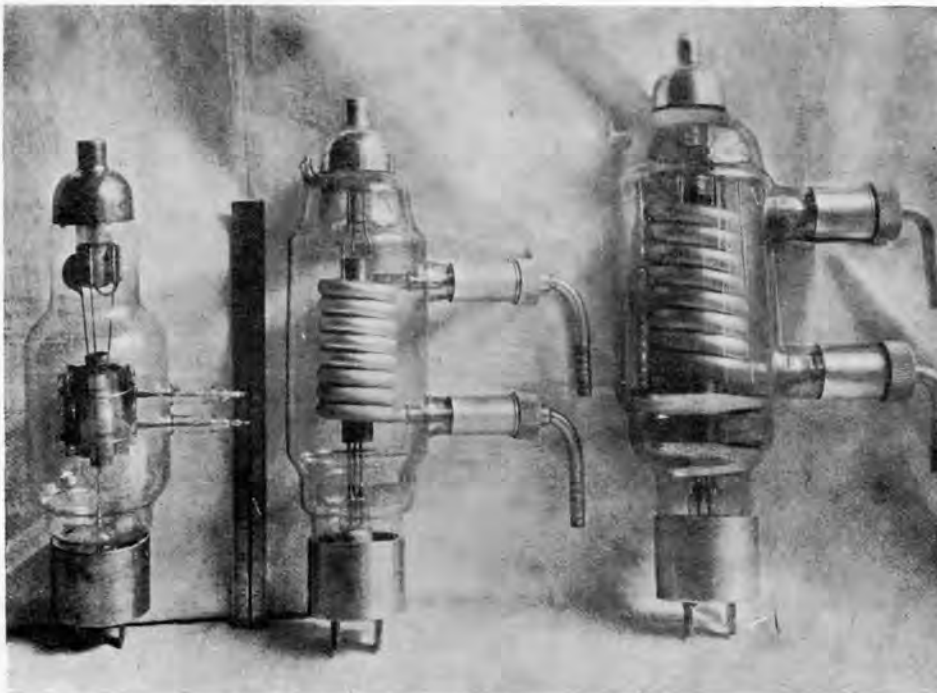
became purely a manufacturing and engineering company engaged in the design and supply of electrical equipment to the Postal Telegraph-Commercial Cable Companies and their subsidiaries—now augmented by the Mackay Radio and Telegraph Company which was organized to take over the Pacific Coast Federal radio stations.

By this time the arc was fast being eclipsed by the vacuum tube as a generator of continuous waves, especially for the newer short-wave transmitters which could be built and operated so economically with beam-type antenna systems. In anticipation of this development, the Palo Alto plant was equipped in 1927 with its own vacuum tube manufacturing department. In the same year, the company also obtained the services and rights to patents of F. S. McCullough, one of the pioneer vacuum tube engineers in America for the development of this phase of the company's manufacturing business.

Kolster's Experiments with Directional Antennas

Further, early in 1928, Dr. Kolster began a series of experiments with directional antennas

employing short waves. Investigation of the radiation patterns of many types of antenna systems was made to gather information regarding their directive characteristics. This work was carried on with equipment capable of operating on about three meters, considered at the time an extremely short wavelength for actual transmission, especially since transmission tests were made between Palo Alto and Seattle (710 miles) and Palo Alto and Honolulu (over 2000 miles). Kolster investigated three main types of antenna systems—parabolic



Three of the early type McCullough transmitting tubes manufactured by Federal in 1928. Left to right they are of 1/4-kilowatt, 5-kilowatt, and 10-kilowatt capacity. The two tubes on the right are equipped with water-cooled plates.

reflectors, loop antennas, and unidirectional antennas.

As a result of Kolster's experiments with directional antennas and the subsequent experience with high-frequency, high-power transmitting equipment, Federal was soon in a position to take the lead in creating for the Mackay System a point-to-point short-wave radio network utilizing vacuum tubes and transmitters of its own design and manufacture as well as directive antennas of superior efficiency.

Federal Becomes a Member of I.T.&T. System

The year 1928 saw another development of major significance in electrical communications in which Federal participated. On March 21, 1928, came the announcement of the merger that consolidated the facilities and assets of the entire Mackay System with those of the International Telephone and Telegraph Corporation. Control of All American Cables, Inc., had been acquired in 1927. I.T.&T. had entered the manufacturing field in 1925 with the purchase of the International Western Electric Company, the name of which was subsequently changed to International Standard Electric Corporation, now the world-wide sales and manufacturing subsidiary of I.T.&T. Extension both of its telephone operating and manufacturing activities in Latin America, Europe, and Asia came in the ensuing years. Parallel developments took place in the field of international communication by cable and radio.



One of the large parabolic reflectors used by Frederick A. Kolster in 1928 for a series of experiments with directional antenna systems employing short waves. These experiments led directly to later developments in microwave directional transmission.

Palo Alto Plant Moved to Newark, New Jersey

In the summer of 1931, the Federal Telegraph Company was moved from Palo Alto to 200 Mount Pleasant Avenue, Newark, New Jersey, where it still continues many of its operations. During this period, its business consisted primarily in the manufacture of marine radio equipment for the Marine Division of Mackay Radio and Telegraph Company and the design and manufacture of high-power vacuum tubes, transmitters, and receivers used by Mackay Radio in its point-to-point communication system.

In 1932, a number of one-kilowatt, vacuum-tube radiotelegraph transmitters were designed and constructed for the China Electric Company. Although a pioneer in the construction of many

earlier types of transmitters, this was the initial venture of any magnitude in the production of the modern type of transmitting equipment other than for marine use.

In 1934, a quantity of 50-kilowatt vacuum tube radiotelegraph transmitters was built for use by Mackay Radio in expanding its communication's network both within the U. S. A. and for communication with countries abroad. Apparatus was also manufactured for All America Cables and the Postal Telegraph Company, as well as transmitting tubes in increasing quantities.

In 1934, development of the first of a line of water-cooled tubes for use in broadcast services was completed. This marked the initial step in accepting vacuum tube business from non-associated companies and paved the way for Federal's present prominent position in the manufacture of tubes for most of the larger broadcasting stations throughout the United States.

Federal Begins Work on Defense Program

In 1936 the Maritime Commission's National Defense Program called for the construction of 500 ships. Federal developed a complete ship-board radio unit for installation in these vessels and has since manufactured the larger share of these assemblies which form a part of the standard equipment aboard Liberty and Victory cargo ships.³ In 1937 Federal produced the prototype of the "walkie-talkie" for the U. S. Signal Corps, as well as considerable other equipment for the Government. From then on, growth was tremendous under the impact of requirements for defense and later for war purposes.

The International Telephone and Telegraph Corporation, having brought its aerial navigation and selenium rectifier developments to this country in 1938, organized the International Telephone Development Company the following year for their commercialization. In 1939, when hostilities broke out in Europe, the I.T.&T. Corporation found it necessary to establish a manufacturing unit in the United States for the purpose of

³ E. J. Girard, "A New Marine Radio Unit for Cargo Vessels," *Electrical Communication*, v. 20, n. 2, pp. 71-72; 1941. See also: E. J. Girard, "The H. F. Marine Radio Unit—Newly Adopted Equipment Influencing Ship Design," *Electrical Communication*, v. 21, n. 2, pp. 85-88; 1943. See also page 468, this issue of *Electrical Communication*.

supplying equipment to its telephone operating subsidiaries in the Western Hemisphere.

A factory was located in Newark, New Jersey, and the new organization, known as the International Telephone and Radio Manufacturing Corporation, absorbed the International Telephone Development Company, whose operations had been centered in New York. Into the I.T.-R.M.C. went outstanding developments long pioneered by I.T.&T. manufacturing associates in Europe. Belgian and French developments were brought to the U. S. A. just ahead of and, in some cases, even after Axis occupation.

The International Telephone and Radio Manufacturing Corporation acquired control of the Federal Telegraph Company in June, 1941, and the two operated as separate I.T.&T. associates until October, 1942, when they were merged into the Federal Telephone and Radio Corporation.

FTR Laboratories Formed

Coincidentally with these organizational moves, the Federal Telephone and Radio Laboratories were established as the research and development division of the Federal Telephone and Radio Corporation at 67 Broad Street, New York, N. Y. The nucleus of the Laboratories was a group of development engineers, specialists in the fields of immediate military needs, such as direction finders, aerial navigation, radar, and communication systems.

As the activities of the laboratories grew, they were allotted more and more space at 67 Broad Street and elsewhere. Field stations also were set up at Great River, Long Island; Telegraph Hill, Hazlett, New Jersey; and at the Rye Lake Airport, Westchester County, New York, for flight-testing airborne equipment.

World War II Developments

A few months before United States entry into World War II, a new 50-kilowatt main transmitter and a 5-kilowatt emergency transmitter for WABC, key station of the Columbia Broadcasting System, and now WCBS, were completed.⁴ The new station was opened October 18, 1941, and was described as the last word in modern high-fidelity amplitude-modulation broadcasting equipment. From December 7, 1941

⁴ E. M. Ostlund, "WABC—Key Station of the Columbia Broadcasting System," *Electrical Communication*, v. 21, n. 1, pp. 61-71; 1942.

to the end of hostilities, it operated on a continuous 24-hour schedule. In January, 1942, the Columbia Broadcasting System also inaugurated its new international short-wave broadcasters built by Federal.^{5,6}

The station consisted of three 50-kilowatt final amplifiers and two 50-kilowatt modulators arranged for simultaneous operation and automatic switching of frequencies to 13 directive arrays capable of operating between 6 and 22 megacycles. Later, a third 50-kilowatt modulator was completed so that three programs could be broadcast at one time, beamed to South America,

⁵ H. Romander, "New 50-kilowatt CBS International Broadcasters," *Electrical Communication*, v. 21, n. 2, pp. 112-123; 1943.

⁶ Howard A. Chinn, "Audio and Measuring Facilities for the CBS International Broadcast Stations," *Electrical Communication*, v. 21, n. 3, pp. 174-179; 1943.

Central America, the West Indies, Mexico, Europe, Africa, and Asia.

During the war, this station was operated around the clock by the Office of War Information and programs were broadcast in 23 languages.

Development of a high-power, high-frequency vacuum tube for short-wave broadcasting made possible the construction of 200-kilowatt stations.^{7,8} Federal built two of these 200-kilowatt short-wave broadcast transmitters.⁹ They were

⁷ G. Chevigny, "Tubes for High-Power Short-Wave Broadcast Stations," *Electrical Communication*, v. 21, n. 3, pp. 143-156; 1943.

⁸ "A Proposal for a Global Shortwave Broadcasting System," *Electrical Communication*, v. 22, n. 2, pp. 154-166; 1944.

⁹ H. Romander, "200-Kilowatt High-Frequency Broadcast Transmitters," *Electrical Communication*, v. 22, n. 4, pp. 253-261; 1945.



Architect's model showing the new buildings and microwave tower for Federal Telecommunication Laboratories, scheduled to be completed in 1947. The first unit was opened in October, 1945.

placed in operation on the west coast in 1945 and performed an important function in the beaming of programs to the Pacific area and the Orient.

In 1942, manufacture was started of a new improved type of subscribers' desk set employing plug-in tropicalized components.¹⁰ This desk set assumed an important war role when, in 1943, it was specified as standard equipment for tropical installations by the United States Signal Corps.

Already operating as an "Arsenal of Democracy" before Pearl Harbor, Federal soon was working full time on war equipment. It took the lead in the design of high-power pulse radar triodes.¹¹

Classified as one of the most important developments of the war and, incidently, one of its best kept secrets was Federal's high-frequency instantaneous direction finder. Credited by the Navy as an important factor in breaking up the submarine wolf-pack warfare, this "secret weapon" was affectionately labelled "Huff-Duff."

Federal's role in the production of telephone equipment for the Armed Forces, while not dramatic, was large and varied. It ranked first in the production of field telephone sets and provided substantial quantities of switchboards, power plants, and repeaters. In many cases Federal redesigned the equipment for simplification, lighter weight, tropicalization, or wider application.

Its production of selenium rectifiers for war equipment was enormous. The variety of uses as well as their efficiency were stepped up so that selenium rectifiers were important equipment in almost every type of war implement. Significant among these were selenium rectifiers developed for the proximity fuse.

It also was the first company to produce a solid-dielectric high-frequency transmission line, meeting all requirements of the Armed Services. It made the only commercially successful dual coaxial transmission line used for direction finding and instrument landing systems and it developed, in conjunction with the Radiation Laboratory at Massachusetts Institute of Technology, the first spiral delay line. It pioneered in the

¹⁰ E. S. McLarn, "Simplified Subscribers' Telephone Sets," *Electrical Communication*, v. 21, n. 1, pp. 3-12; 1942.

¹¹ J. J. Glauber, "Radar Vacuum Tube Development," *Electrical Communication*, v. 23, pp. 306-326; September, 1946.

development of low-capacitance transmission cable.^{12, 13}

The story of Federal's wartime activities, or at least the part that no longer remains classified, has been outlined in this journal.^{14, 15} The Army and Navy "E" was awarded the Federal Telephone and Radio Laboratories on April 20, 1943. A second star was awarded December 2, 1944 and a third—April 11, 1945. The Federal Telephone and Radio Corporation received the Maritime "M" Pennant and Victory Fleet Flag, December 21, 1942, and the Army and Navy "E" award, January 30, 1945.

Plans for Modern Buildings

Because of the corporation's exceptional growth, centralization of manufacturing facilities during World War II was impossible, and activities were spread over 50 locations, including plants, storage accommodations, and administrative quarters, located in Newark, New Jersey, and adjacent areas. Nevertheless, plans for the construction of modern buildings to house the manufacturing activities as well as laboratories were formulated. The 120-acre site of the former Yountakah Country Club in Nutley and Clifton, New Jersey, was purchased for this purpose. Ground for the first unit was broken on February 17, 1943.

The new laboratories are located at the Nutley area of the site, and the manufacturing plant in Clifton. First units of both groups of buildings were formally dedicated October 3, 1945. The laboratories, embodying advanced construction theories of architects and scientists, are of steel fabrication sheathed with aluminum, a type of design which affords protection from outside electrical disturbances. When these laboratory buildings are completed early in 1947, all Federal research activities will be centered in Nutley.

A special 300-foot tower is also being erected at Nutley for ultra-high-frequency research on radar, aerial navigation, frequency modulation, pulse-time modulation, television, mobile radio, and point-to-point long-distance telephony.

¹² H. Busignies, "Applications of H-F Solid-Dielectric Flexible Lines to Radio Equipment," *Electrical Communication*, v. 22, n. 4, pp. 295-301; 1945.

¹³ K. H. Zimmermann, "Spiral Delay Lines," *Electrical Communication*, v. 23, pp. 327-328; September, 1946.

¹⁴ *Electrical Communication: 1940-1945—Part II*, v. 23, pp. 214-240; June, 1946.

¹⁵ *Electrical Communication: 1940-1945—Part III*, v. 23, pp. 363-366; September, 1946.

The manufacturing plant at Clifton when completed will provide approximately one million square feet of floor space.

Post-War Developments

Soon after V-J day (on September 27, 1945), Federal demonstrated a new system of Pulse-Time Modulation. For the first time, using PTM, 24 simultaneous 2-way conversations were carried over an 80-mile microwave relay circuit at 1300 megacycles.¹⁶ All conversations were transmitted on a single carrier frequency. An important feature of PTM is that only one transmitter and receiver are employed at each terminal for all conversations. Further, a PTM demonstration in 1946 showed the feasibility of broadcasting as many as eight programs of high-fidelity speech and music, facsimile, and teleprinter signals, from a single transmitter.¹⁷ A single receiver detected, amplified, and separated the eight programs for distribution to the loudspeakers and other terminal equipment.

In January, 1946, Federal installed the first high-definition, ultra-high-frequency, full-color-television transmitter in the Chrysler Building, New York City, for the Columbia Broadcasting System. The new transmitter operates on 490 megacycles with one kilowatt of power.¹⁸

In October, 1946, Federal demonstrated features of its new aerial navigation and traffic control system.¹⁹ The new system embodies the results of a concentrated effort in the direction of coordinated planning, global in scope, of radio aids to aerial navigation. It supplements Federal's pioneer work in developing instrument landing equipment for the Civil Aeronautics Authority and the United States Signal Corps, as well as its development of the ultra-high-frequency radio range with sector identification.^{20, 21, 22}

¹⁶ D. D. Grieg and A. M. Levine, "Pulse-Time-Modulated Radio Relay System—Terminal Equipment," *Electrical Communication*, v. 23, pp. 159-178; June, 1946.

¹⁷ D. D. Grieg, "Multiplex Broadcasting," *Electrical Communication*, v. 23, pp. 19-26; March, 1946.

¹⁸ See Page 406, this issue of *Electrical Communication*.

¹⁹ H. Busignies, Paul R. Adams, Robert I. Colin, "Aerial Navigation and Traffic Control with Navaglobe, Navar, Navaglide, and Navascreen," *Electrical Communication*, v. 23, pp. 113-143; June, 1946.

²⁰ H. H. Buttner and A. G. Kandoian, "Development of Aircraft Instrument Landing Systems," *Electrical Communication*, v. 22, n. 3, pp. 179-192; 1945.

²¹ Sidney Pickles, "Army Air Forces' Portable Instrument Landing System," *Electrical Communication*, v. 22, n. 4, pp. 262-294; 1945.

²² A. Alford, A. G. Kandoian, F. J. Lundburg, and C. B. Watts, Jr., "An Ultra-High-Frequency Radio Range with

Along with its early work in developing A-M broadcasting transmitters, Federal is now taking a leading position in the production of F-M broadcast transmitters. Federal also has developed a new 8-element square loop antenna for F-M stations which gives an effective power gain²³ of 9.

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²³ See page 415, this issue of *Electrical Communication*.

The 'Federal' Story

Review & Commentary

By -

THORN L. MAYES

The paper, "Federal Telephone and Radio Corporation", by F. J. Mann is an excellent history of the development of the Federal Company. C. E. Elwell did an outstanding job of getting the company started, which was well publicized, but the engineer who did the necessary research and was responsible for the design of the large arc transmitters should get credit for his contribution as their successful performance was responsible for the rapid growth of the Federal Telegraph Co., from 1913 to 1920.

Leonard Fuller came to Federal in Sept. 1912 and was assigned to study the arc transmitter and improve its operation.

Night time communication between San Francisco and Honolulu was excellent but with the 30 KW transmitters, daytime contact was poor at times, indicating the need for more power. The 30 KW design had been made by ratiocing up dimensions of the 12 KW Danish unit. These dimensions were again ratioced up to what was hoped would be a 60 KW unit. Fuller tested this unit which did not develop any more than the 30 KW design so was a failure. These tests clearly showed that basic research into the performance of the arc would have to be made to learn how to design larger units.

The success of the 30 KW arc that was tested by the Navy during acceptance tests of the 100 KW spark transmitter at Arlington Virginia indicated to the Navy the possibilities of large arc transmitters. The Navy contacted Elwell early in 1913 and he agreed to build a 100 KW design in spite of the failure of the 60 KW design that had just been tested.

Elwell resigned from Federal in the early Spring of 1913 and Leonard Fuller was then made Chief Engineer with the responsibility for the design of all Federal Equipment.

He immediately initiated the experimental research, and began the basic study to gain the necessary data to design the larger sizes. The engineering and drafting group was small so he added more people to handle the increased load. H. F. Elliott, a gifted mechanical designer, was found who took care of the mechanical design of all the larger units while Fuller, in addition to the administration, took care of electrical, magnetic and cooling designs. He was confident that larger arc transmitters could be built but he would not at that time guarantee the performance of the 100 KW arc the Navy had ordered for the Darien Canal Zone Station.

The Darien transmitter was shipped early in 1915 and the station was commissioned in July. The transmitter met all expectations and in February 1916 orders were placed for a 200 KW set for San Diego and two 500 KW units for Pearl Harbor and the Philippines. All met their guarantees. Several more 500 KW transmitters were built for the Navy long-range stations and during WW-1 for a 1000-KW transmitter to be installed by the Navy in France. This contract called for an antenna current of 650 amperes but Dr. Fuller states that they regularly obtained currents of 750 amperes. Captain Howeth in his, "Communication-Electronics in the U.S. Navy" (Page 243) states that the antenna and ground system for the Lafayette Station, in addition to the transmitter, were designed by L. F. Fuller, Chief Engineer of Federal Telegraph Co.

During this period of research and designing the large arc transmitters, Fuller earned a Doctors degree in Electrical Engineering from Stanford University. He took out 23 patents on arc transmitter design and improvement and prepared 11 technical papers on arc transmitter design and performance, several of which were presented before the Institute of Radio Engineers and the American Institute of Electrical Engineers.

C. F. Elwell, in his book written in 1923 "The Poulsen Arc Converter," (Page 34) states. "For those interested in the theory of the commercial Poulsen arc generator from an engineering point of view, one cannot do better than quote liberally from Dr. Fuller's paper delivered in 1919 before the Institute of Radio Engineers and published in Volume 7, No. 5 of their Proceedings

Dr. Fuller left Federal in 1930 to join the University of California as Professor of Electrical Engineering and Chairman of the Dept. of E. E. There he soon met Dr. E. O. Lawrence. They had much in common and formed a lasting friendship. One day while at lunch in the Faculty Club, Dr. Lawrence told Dr. Fuller that he was elated over the tests of his "cyclotron" built on a four inch diameter magnet. The success of these tests proved his theory of the cyclotron was correct and that he would like to build a larger one that could be used for experimental work. The larger magnet structure would be an appreciable part of the cost and he didn't know if he would be able to get the necessary appropriation. Dr. Fuller, still a Vice President of Federal, told Dr. Lawrence that in the Federal yard was the cast steel magnet frame of a 1000 KW arc that had been cancelled, that had a pole piece 40 inches in diameter. That as Federal was in the process of moving their plant to New Jersey, he might get it transferred to the University. He did arrange the donation and this magnet was the foundation of the now famous Lawrence forty inch cyclotron.

- 30 -

1908 - Famous "Beach" Arc Station



This POULSEN WIRELESS 'ARC' STATION was built on the beach at San Francisco in 1908. The wooden lattice-work towers were 300 feet high and supported by cables salvaged from the old San Francisco cable-car system. This station marked the beginning of a whole new era in wireless - in both telegraphy and voice. It was the first time the Poulsen Arc was used commercially, with its semi-secret method of transmission and reception and it quickly found its way into stations of the United States Navy. It also made possible a new and inexpensive means of extremely long distance communication for the Navy. Stations in Panama, Cavite, Hawaii and Alaska were in direct communication with Washington and each other for the first time, thus giving America a reliable, high-speed system of communication.

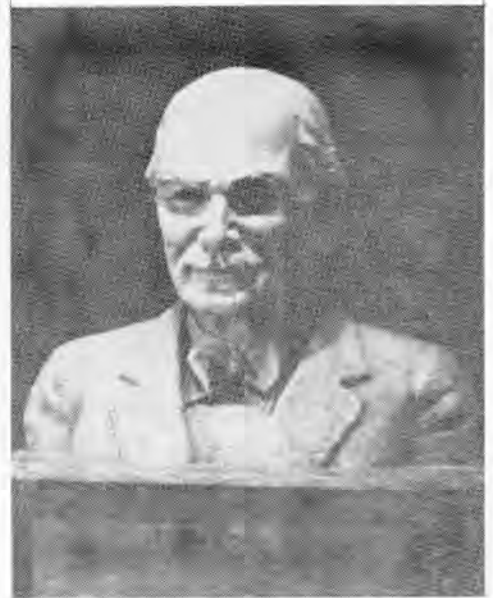
While the foregoing article by F. J. Mann, Managing Editor of Electrical Communications (Circa-1946) was essentially about engineering and development and he covered it well. However, the success of the Company would and could not have been possible were it not for the outstanding group of "Operations People" who were able to coax the best results from the equipment and 'sell' its capabilities to a doubtful world of communications experts.

There are many who assisted in the development of this quite famous organization who have not been named in this article and we hope some day to bring the "Story" of those who handled the operation and operational details of the company. Many of these men still live in the San Francisco Bay area, although their number is dwindling through the passage of time.

We would like to add a timely salute to all these fine men and women who also helped to stamp the name of "FEDERAL" in the History Book of the Wireless.

W. A. B.

Bust of the late Doctor Lee de Forest in the Foothill Electronics Museum of the Perham Foundation, Foothill College in Los Altos Hills, California.



The 'Father' of Radio

While Guglielmo Marconi is credited with being the Father of Wireless, it is undisputed that Dr. Lee deForest is the Father of Radio.

These two great inventors were compatible. Marconi's discoveries gave the world the wireless telegraph and wireless telephone, a true means of communicating through space without the aid of wires. The first decade of wireless belongs to Marconi, crude as some of his early apparatus might have been. The second decade belongs to Dr. Lee deForest, whose first invention, the vacuum tube, called the Audion, revolutionized not only the science of wireless communication but ushered-in the new era of electronics.

Marconi's invention was limited to communication; deForest's was all-encompassing, for it not only removed the lethargy from wireless but gave the world an entirely new tool which was useful for countless purposes and services other than wireless.

The distinction between wireless and radio can be clearly defined and drawn with the advent of the deForest Audion. Not only was extremely long distance communication with relatively low power made possible with the advent of the "Magic Lamp of Radio" but other communication services were likewise benefitted. The trans-continental telephone of the Bell System, for example, could not have succeeded but for the vacuum tube of deForest. And it is needless to mention here the countless new electronic devices and systems, including the space age, which were made possible solely because of Dr. Lee deForest.

Ironically, in recent years the vacuum tube has given way to the transistor, a device developed and perfected by the very people who first enjoyed their greatest successes with the aid of the deForest invention. And in due time the transistor of the Bell Laboratories will give way to newer and better devices.

The expression radio came into general use almost simultaneously with deForest's discovery of the vacuum tube. It was called a radio tube and not a wireless tube because its construction included a number of wires - one for the grid, one for the filament, and the usual connecting leads which protruded through the glass bulb or envelope. It was never referred to as a wireless tube in America.

although the British still call their tubes wireless valves, or radio valves, depending on the services they render.

THE DISCOVERY OF THE DEFOREST AUDION

The deForest radio tube was not an accidental discovery by any stretch of the imagination. It was developed by slow and often discouraging methods of cut-and-try.

As early as 1900, while deForest was experimenting with the first form of electrolytic detector used for wireless communication, he found that the light from a Welsback burner would flicker, grow dim, then brighten, when a spark was made to appear between the gap of his induction coil. At first he believed this phenomenon to be of an electro-magnetic nature, but to his disappointment he found that it was due merely to an acoustical condition. Nevertheless, it inspired him to experiment further with his "gas-flame" detector, which consisted of a pair of electrodes suspended above the flame of a Bunsen burner. Next he inserted two filaments in a common glass bulb or envelope, then he tried a filament and two platinum plates. None of these devices proved more sensitive than the two-element Fleming Valve invented by Professor Sir John Ambrose Fleming of England. This valve consisted merely of a heated filament and a plate.

The great discovery of Dr. deForest came when he inserted a grid, or a zig-zag platinum wire between the filament and plate of a vacuum tube, thereby making it a three-element device. The control grid, as it is called, allows a stream of electrons flowing from filament to plate to be controlled by external means. The first grid was a small metal plate with many small perforations, but it was quickly replaced by the zig-zag wire grid, not much different than the grids found in radio tubes of the present era.

The deForest Audion was discovered in 1906 and was patented in the following year, under the serial number 841,378, U.S. Patent Office, January 15, 1907.

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DR. LEE DEFOREST AND HIS WIRELESS TELEPHONE

Dr. deForest has stated, and others are in general agreement, that this was one of the most valuable patents ever issued by the U.S. Patent Office.

No better description of his invention has ever been written than that of Wilbur B. Driver of Newark, New Jersey, who says as follows:

"Of all the creations shaped by his genius, Dr. deForest's 3-element grid Audion tube - the miracle seed responsible for the swift growth of electronics - best reflects his enormous gift to mankind. To understand this vastness, measure the laughter of every motion picture, television and radio audience . . . tally the wages earned by millions, from solderer to screen star . . . appraise the value of the lives spared in wartime and protected in peacetime . . . and add those seemingly limitless electronic inventions fathered by the precious Audion. And though you calculate all these through generations yet unborn, even to infinity, the resultant figure is but a fraction of the contribution's total true value."

Said ex-President Herbert Hoover: ". . . to honor an inestimable benefactor of mankind . . . He will be remembered when all the rest of us are forgotten."

During the course of his long and productive lifetime he secured almost 300 patents covering various wireless, radio, and electronic circuits and innovations. He made and lost three fortunes. The costs of patenting his many ideas were extremely high, as any inventor knows. And the additional costs of protecting his discoveries and defending himself through scores of court actions, deprived him of all his wealth.

His discovery of the Audion came at a time when his fortunes were at a low ebb. He had previously founded the deForest Wireless Telegraph and Telephone Company, in which stock was publicly sold. And without his knowledge, several of the officials of the company engaged in unscrupulous practices which resulted in their arrest and conviction. Dr. deForest was charged with the others and remanded to trial. It was his darkest hour, for he himself was wholly innocent of any wrongdoing. He was merely the inventor of new wireless circuits, and he was wholly unaware of the methods employed by promoters to seel the shares of stock in his company. The jury acquitted him, but found others of his company guilty.

Once when he was in dire need of funds, and at a time when he went without meals, sometimes for several days, he was approached by an attorney who expressed an interest in his vacuum-tube amplifier invention. Suspicious that the man was a repre-

sentative of one of the large corporations, deForest first elicited from him a solemn pledge that such was not the case. Taking the attorney at his word, deForest signed over one of his priceless patents for a pittance--\$50,000.00--not knowing that he could have been paid \$450,000.00 he held out for this amount. After the deal was signed, sealed, and delivered, he learned to his consternation that the attorney was in fact a representative of the Telephone Company.

He saw his audion amplifier tube used during 1915 when the first trans-continental telephone conversation was conducted between Washington and San Francisco to commemorate the opening of the 1915 Panama-Pacific International Exposition. The demonstration was made literally under his own nose, for he himself had an exhibit almost adjacent to where the telephone demonstrations were being held. No mention was made of the use of his audion amplifier, nor were the people told that the success of the venture was due in great part to the deForest discovery.

His pride hurt, he fought back. Each time a trans-continental conversation was consummated, he announced by printed notice and spoken word that the deForest vacuum-tube amplifier made the achievement possible, and in his own booth he explained how the feat was accomplished.

One of the men who knew him best was Gilson V. (Rex) Willets of Villa Grande, California, on the Russian River, where Dr. deForest and his gracious wife spent much of their spare time in the late years of the inventor's life. Willets first came to know deForest when he sought employment in his High-bridge, New York, experimental laboratory.

"I wanted to be close to this great man," said Willets, "and I hoped that some of his genius would rub off on me."

Asked to relate his innermost thoughts of deForest, Willets countered by saying that he was really three men in one, lived three separate and distinct lives, made and lost three fortunes, wooed and wed four women, the last of which was the beautiful motion-picture stunt actress Marie Mosquini, the greatest asset of his long and colorful life. She was many years his junior, yet they lived an idyllic life. She was his inspiration in his sunset years. He never stopped inventing. Among his last projects were those related to the production of electrical energy by thermal means. He foresaw light, heat, and power from new untapped sources of thermal energy--for the home, the plant, and in all other forms of human endeavor.

Said Willets: "Unlike other inventors, Dr. deForest did not subscribe to the theory that a patent was merely an invitation to a lawsuit. He defended his inventions vigorously, spending huge sums for the best available legal talent, sometimes to the extent that the costs of such litigation exceeded any remuneration he might have received from the sale of a patent or its royalties.

"He seemed never to run out of ideas. They came to him in an endless stream, and he passed them along to his numerous co-workers, assigning to them one task after another.

"We celebrated his 80th birthday at Villa Grande. I noticed for the first time that a change had come over him since the transistor began to replace his vacuum tube in ever-growing numbers. Years ago he

(Continued on Page 33)

de Forest

"Father of Radio"

lauded the transistor, believing it would merely supplement the vacuum tube, but never replace it. When faced with stark reality, he became embittered for the first time in the more than 50 years that I had known him. 'I do not wish to discuss the transistor,' he scowled, 'And I never want to hear it mentioned again.'

He was a deeply religious man. A poet. And a philosopher. He was born in 1873 and reared in Talladega, Alabama, where his father was president of a Negro College. Early in life he displayed remarkable mechanical skill, building steam engines and miniature working models of small locomotives.

In 1896 he was graduated from Yale with a B.S. degree, and then he went on to graduate school. He worked hard to earn the money needed for his education; he was stoutly determined to make a success of his life, setting his sights on Marconi. "I have resolved to become a greater man than the inventor of wireless himself," deForest once said.

When Admiral "Fighting Bob" Evans took his "Great White Fleet" of U.S. battleships on a world cruise, the Navy equipped its ships with deForest wireless apparatus. This was the first time in history that our ships were able to communicate with one another. The year was 1905.

Prior thereto, deForest secured a number of basic wireless patents and formed a company under his own name. The first high-power U.S. Navy shore stations were soon deForest equipped, and he found himself with more business than he could possibly handle.

But in 1906 he was cashiered-out of his own company, and--to add insult to injury--was bilked out of his first wireless patents. He did not complain. He never did. Instead, he went ahead with new inventions, and out of the 1906 disaster came his audion tube; this patent he retained for himself under his own name.

By 1920 his "Photofilm" was the miracle discovery of the early motion picture industry, and his later success, the astounding discovery of adding sound to film, was the contributing factor to a new runaway idea in movie-making.

de FOREST CONQUERS MT. WHITNEY AT "SEVENTY"

By this time he had moved from his eastern abode to Los Angeles, where he took to mountain climbing as an avocation. To celebrate his 70th birthday, he climbed Mount Whitney.

The historian for the American Tel. and Tel. Co. found deForest to be a controversial and complex man, yet brilliant, willful, egotistical, adventurous and poetic. His tribute to him was expressed in these words: "deForest, through his invention of the audion tube, altered the course of human history. He produced a device which magnified electrical signals, thereby tapping energies whose very existence might otherwise have remained completely unknown."



EARLY deFOREST AUDION AMPLIFIER

The first deForest audion bulbs, or vacuum-tubes were approximately 2-1/2 inches in diameter, and their appearance was precisely as shown in this illustration.

Here is a "cascade amplifier" with three audio stages, a cumbersome device in a large wooden cabinet. The tap-switches allowed for selection of various degrees of "B" voltage - from 12 to 36 volts.

A tiny 3-stage transistorized amplifier of today, which will accomplish more efficiently and more effectively what deForest was able to do just prior to World War One, would be no larger than one of the switch knobs of the amplifier illustrated here . . . and soon, such an amplifier will be the size of a pin-head.

From the late Henry W. Dickow's m/s "Tales of the Wireless Pioneers". Pictures are from the Dickow collection.

Dr. Lee deForest died on June 30, 1961, at age 87, the victim of a heart attack. Until a few years before his death he maintained a laboratory on the 14th floor of a building overlooking the western headquarters of practically every major radio and television production company . . . the giant he helped create.

With him when he died was his devoted wife, Marie. She said of him: "He was treated badly by his fellowmen, for whom he did so much. Ours was a most companionable life together; I know at last he need not cope with any more disappointments and hurts. I do not mean to be sacrilegious--but after living with him for so many years, I could not help but see that his life was so very Christ-like. You could rob him in the morning, and in the afternoon--if he met you on the street--he would greet you and shake your hand. Lee deForest was not only religious, but he lived a religious life--every day of it."

When I asked Marie deForest to state his last words to her, she replied as follows: "The marriage flame in our lives never grew dim. Yes, I do recall his last words to me; they were: "I love you more than tongue can tell."

His estate was valued at \$1200.00, and consisted of a check from American Tel. and Tel. Co. in the form of reimbursement for the use of his earlier patents.

—H.W. Dickow



THE de FOREST STAMP

The United States Postal Service issued a commemorative stamp on July 10 1973 hailing "progress in electronics". The stamp above which is one of four issued, shows the electron tube which was invented in 1906 by the late Dr. Lee de Forest when he was 33 years old. This year (1974) if he were still alive, he would be celebrating his 102nd birthday.

It was the invention of the electron tube 69 years ago that opened up a vast billion dollar electronic industry. de Forest's Audion tube made possible radio broadcasting, long distance telephone service, stereo public address systems, two-way radio communication, television, talking motion pictures and many other miracles employing electronics.

The News story below is taken from the "HEMET NEWS", his favorite adopted 'hometown' daily and published June 5, 1973.

Credit for the issuance of the Postal Stamp in Dr. de Forest's honor properly belongs to an organization of men who either worked for or were associated with Dr. DeForest in the early days. It is called logically . . . DeROEST PIONEERS, Inc. with headquarters at 254 Vincent Ave., Lynbrook, New York,

Mr. Kenneth Richardson is currently Secretary-Treasurer and Mr. J. R. Poppele President. Directors include several members of the Society of Wireless Pioneers. We hail the men of this organization for their fine work and contributions to history of the wireless and radio, which is our proud heritage.

(*) Right Column.

Stamp to Honor Lee deForest

Issuing of a new 11-cent airmail stamp honoring the late inventive genius Lee deForest has been set by the United States Postal Department for July 10, and his widow, well-known Hemet resident, Mrs. Marie deForest, has been invited to participate in special ceremonies.

The deForest stamp is one of four pointing to progress in electronics and the fact that radio, talking movies, television and a growing number of modern progressive electronic-motivated activities would not be possible without the inventions of deForest, Guglielmo Marconi's spark coil and others.

The 11-cent airmail stamp shows Lee deForest's early contribution, the Audion tubes, which made it possible to transmit the human voice as demonstrated in tests between Arlington, Virginia, and Paris, France, in 1915.

DeForest's inventions also led later to the developing of the talking motion picture, facsimile transmission and television.

The special first day ceremonies for the new electronic stamps will be held in New York City July 10. But there is planning also for a local presentation at Hotel Vosburg in San Jacinto, one of inventor deForest's favorite places in his

visits here, and Mrs. deForest has promised San Jacinto Postmaster Donald L. Webster and Wilfred (Willie) Ryan, co-owner-manager of the Hotel Vosburg and San Jacinto Chamber of Commerce president, that she will participate.

Details are reportedly being worked out now with Robert Otta of the San Jacinto postal staff, as contact chairman for Postmaster Webster.

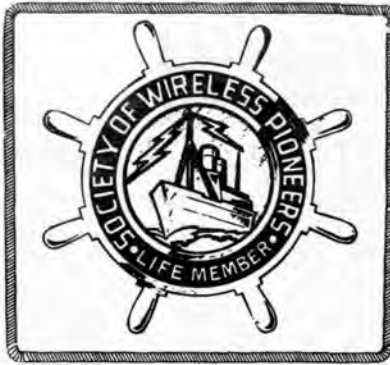
Mrs. deForest has direct contact with the husband and wife team of artists, Walter and Naiad Einsel, of Westport, Connecticut, who have won numerous awards for their joint art and who created the designs for all four of the stamps.

Mrs. deForest was an honor guest and speaker at the formal opening January 20, 1973, of the new two-story Electronics Museum constructed on the campus of Foothill College at Los Alto and featuring inventions of her world-honored inventor husband. During his lifetime he patented more than 300 inventions.

The national DeForest Pioneers organization had international electronics leaders present at a large first annual banquet meeting held in New York in April 27, this year celebrating the 100th birthday of Dr. Lee deForest and many awards were made.

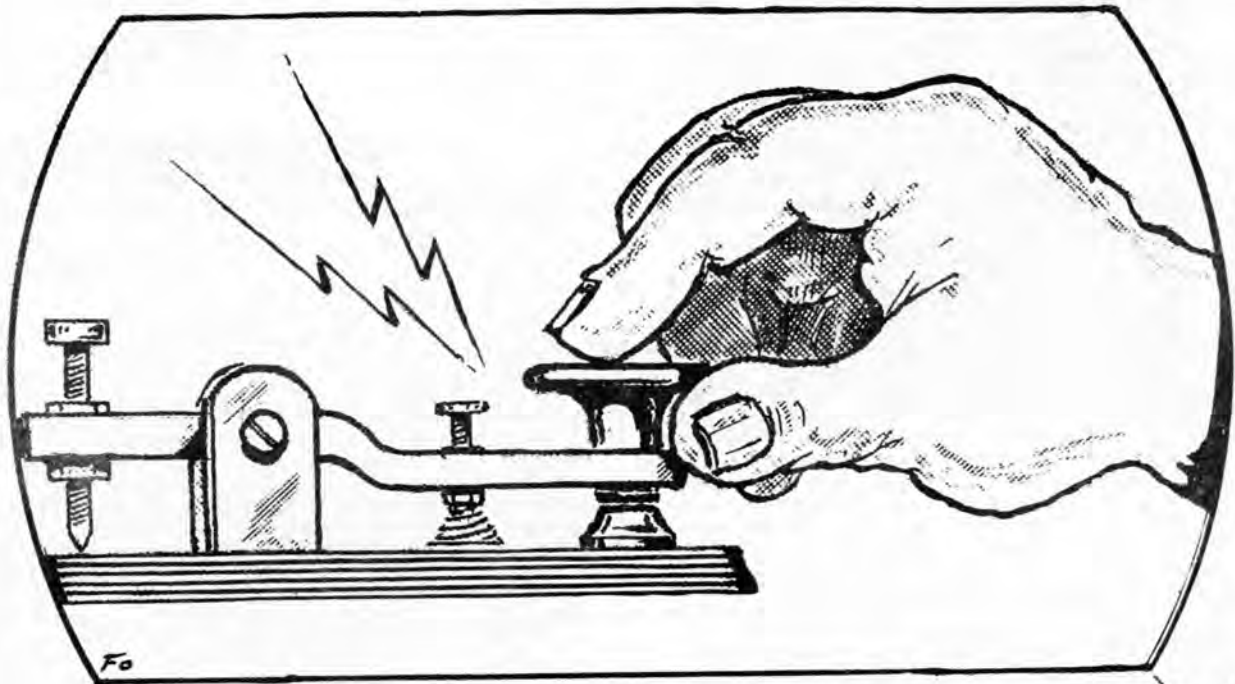


NOSTALGIA—On July 10, the United States Postal Service will have special ceremonies heralding the issuing of a set of new stamps "pointing to progress in electronics." One of the featured issues will be the 11-cent airmail stamp honoring the late Lee deForest's inventive genius in creating the Audion tubes which made it possible to transmit the human voice and brought him the title "father of radio, motion pictures and television." His widow, Marie deForest, Hemet resident, shown here with him in a favorite 1947 photo, has been asked to actively participate in the July ceremonies. A special presentation is being planned at the Hotel Vosburg in San Jacinto "which was one of Lee's most favorite places in the years we visited here," Mrs. deForest declared.



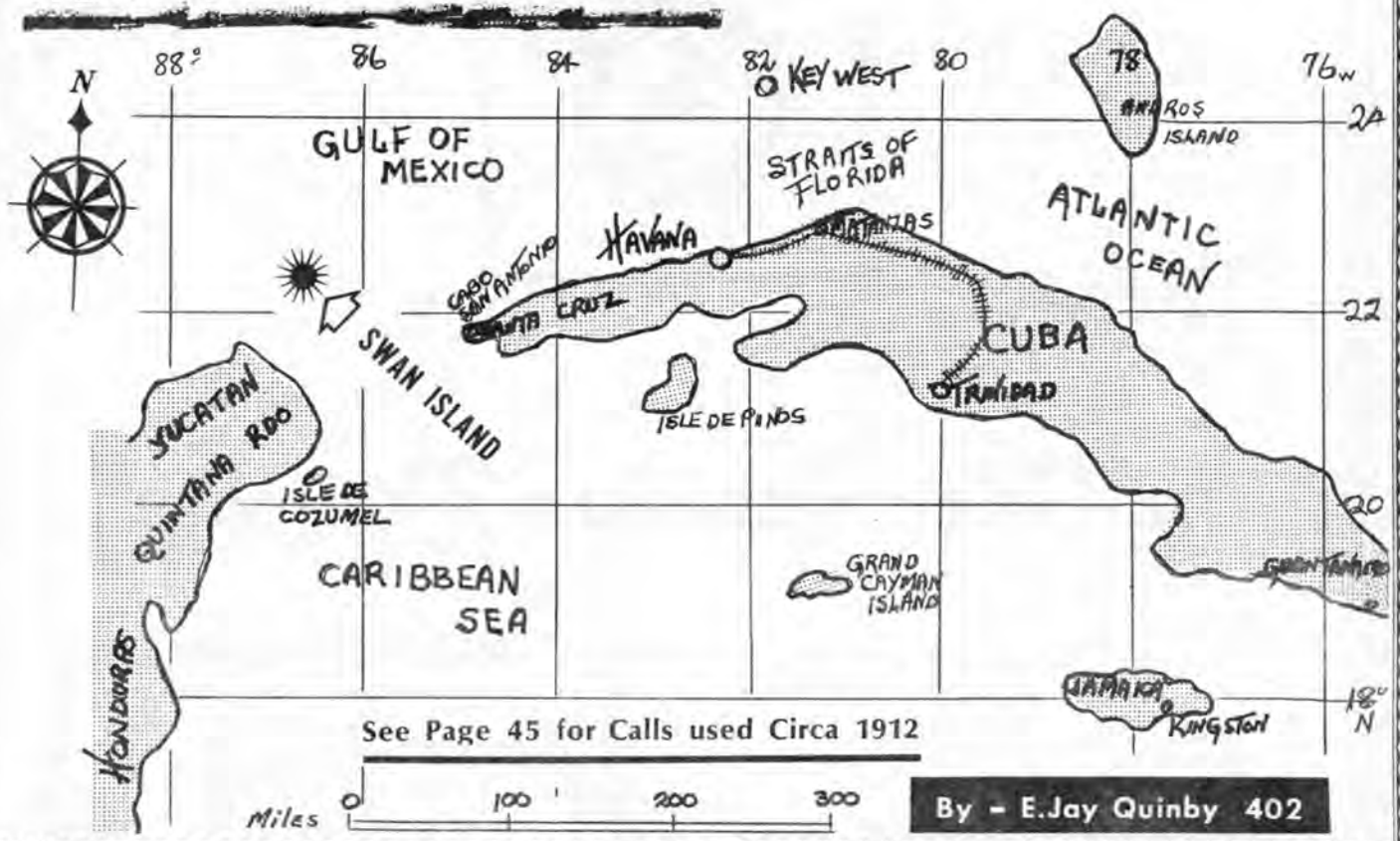
Tales...

of The Wireless Pioneers



DEDICATED TO
Henry Dickow

Marooned in Paradise



It was raining. It had been raining for ten days and nights steadily, with occasional heavy deluges that portended the coming hurricane. This was mid-September, the hurricane season. Jack Fogarty tossed restlessly on his cot. His head was throbbing from the effects of repeated doses of quinine. There was a relentless ringing in his ears. In the pitch darkness, a mouse-size roach scuttled across his face, and he snatched at the loathsome creature, inadvertently crushing it so that its sticky guts oozed through his fingers. How had the damned thing penetrated the netting of the mosquito-bar draped over his musty-smelling mattress? DAMN the tropics, and DAMN Fred Muller back there in Boston for talking him into accepting this assignment to Swan Island, which he described as a "veritable tropical Paradise in the Caribbean Sea." Muller hadn't mentioned the inevitable malaria, the poisonous vipers, the loathsome creatures that crawled by night and the clouds of winged pests that swarmed by day and raised itching welts to torture a man's soul hour by hour, day by day, night by night.

Now the irritating fungus seemed to be gnawing at the skin between his toes. Maybe it was infection from the coral rock on the shore where he had bathed or possibly it came from the green mold that encompassed the leather of his boots, inside and out. So this was Paradise!

It was too late to get off the island now. The turtle-schooner that had put in from Key West had taken his relief operator over to Trinidad on the south shore of Cuba. "Rummy" Wren had at last been

overtaken by a case of delirium tremens from the quantities of Baccardi he had been consuming to treat the chills and fever. "No quinine for me", he had insisted. "I know how to handle this damn misery." But Wren had attacked him with a native machete in one of his drunken frenzies, and Jack had narrowly escaped with his life, suffering only a few superficial lacerations. That was when he summoned the turtle schooner MATTLAND ADAMS passing nearby, to take Wren over to Cuba for treatment. Like the turtles lashed down on their backs, with legs kicking in the air, Wren had been carried away on deck, securely tied down. The last Jack had seen of him, "Rummy" was kicking with his feet and flailing with his arms. The Conch crew kept cautiously out of his reach. Maybe they could do something for poor "Rummy" over at Trinidad in the primitive native sick-bay. If not, he would have to endure the two-day trip in the caboose behind the tri-weekly narrow-gauge freight train that ambled its leisurely way up through the mountains to Havana. Jack tried to picture the surprise, and the delight, that Wren would experience when he found himself in Havana. But meanwhile, there was that relentless ringing in Jack's ears. This, with the throbbing headache, was driving him to distraction. The oppressive, damp heat frustrated nature's efforts at refrigeration through evaporating perspiration, and he lay in pools of his own sweat, suffering and cursing. If he opened up the shutters on the windward side, the whole little establishment would get storm-soaked. But properly protected from the downpour the place was stifling. With Rummy gone, Fogarty was really stuck at this God-forsaken outpost.

Half asleep and half awake, Jack seemed to hear the rasping cadence of dots and dashes through the incessant whine of the quinine. Two or three times

he imagined he was hearing signals, for he had left the receiver turned on with the volume turned up, just in case some ship might try to call Swan Island. Actually, it was Jack's off-watch period, when "Rummy" should have been on duty, but now he was alone, and instead of a 12-hour watch, he was burdened with manning the station the clock around, snatching whatever sleep he could. There was that illusion again, sounded just like a Wireless Operator calling, calling, calling. Repeatedly Jack tried to stir himself from the semi-stupor of a man too sick to care, but each time he would sink back into that border-land condition between the conscious and the unconscious. And there was that dot-and-dash sequence again, almost completely buried beneath the shrill scream of the quinine pills. It was just like trying to copy press dispatches through the interference of some "lid" who didn't have sense enough to suspend calling idly CQ, CQ, CQ in the effort to conjure up a little gossip over the ether waves with some other ship - any other ship - that might by chance be within reach of his transmitter.

The static was bad this night. At this time of the year, static in the Gulf of Mexico and the Caribbean Sea was always bad, but tonight it was worse than usual. There was that call again, CQ (static), CQ (static) as burst after burst of nature's electrical interference drowned out the transmission. Once he imagined he heard US, US, the call letters of Swan Island, but the static was so bad that it was far from a definite US. Jack began to figure, in a hazy manner, where any of the United Fruit steamers might be at the moment.

He had checked with the operator on the CALAMARES as she passed on up through the Florida Straits on her way to Boston with a cargo of bananas, but he couldn't recall that any of the other United Fruit steamers were due in the vicinity. However, he couldn't be sure. They might have put on an extra charter ship to help out in the rush season. But there was that US, US again. SOMEBODY was calling Swan Island. If it wasn't one of the United Fruit Company steamers, the HELL with 'em. He'd be damned if he'd get up in the middle of the night from his sick-bed and struggle with that confounded gas-engine trying to get it started, only to have some nit-wit ask for Press, like as not because he had missed the regular Press transmission from the powerful station at Key West, too sleepy to wait up and catch it when it was broadcast.

But there it was again - that insistent Operator was trying to raise somebody with his CQ (static), CQ (static), US, US, CQ (static), and then came the signature at last, OA, OA. So THAT was the guy - Operator on the little Banana Boat OLINDA. He probably wanted some Press, or wanted to gossip with "Rummy" Wren, who was supposed to be on watch at this time. The Hell with him!

The ringing continued to plague Jack's ears, with here and there a few wireless telegraph signals interspersed. The Tropical Wireless Telegraph Company was owned by the United Fruit Company, and Jack wasn't being paid to stand watch 24 hours a day and shoot Press to every little old rival Banana Boat that traversed the Yucatan Channel and the Florida Straits. He tried to ignore the intermittent signals and catch some much needed sleep, but each time he almost dropped off the signals dragged him back into a half-conscious alert that automatically prompted him to attempt to interpret the message coming from the headphones lying on the operating desk in the next room. There it was again, US, US (static) CQD, CQD!

Suddenly Jack Fogarty sat bolt upright on his soggy cot. Could he have been dreaming or was that actually CQD he had heard? Now he listened more intently, but his head was torturing him with its throb-

bing, and the shrill whine of the quinine seemed to put up a barrage of interference worse than the tropical static. But there it was again, US, US, between electronic showers that sounded like gravel on a tin roof, and then CQD, US, CQD, CQD, (burst) OA, OA. The little steamer with the big smoke stack was frantically calling Swan Island, and she was in trouble, for she was pleading for help with the ominous CQD signal, meaning ALL STATIONS, DISTRESS. Jack leaped through the mosquito-bar, stumbled into the engine compartment and switched on the storage battery lights. Half awake, he began trying to crank the gasoline engine that drove the alternator. The trick was to slip the belt-drive off, get the engine started, then with a deft flip of the wrist fling the belt back onto the driving pulley, without losing a hand in the process. The one-lung gas engine was hard enough to start in dry weather, but with the all-pervading dampness that had descended on his entire little world, the task became Herculean. It meant endless cranking, choking, priming, choking, cranking, priming, choking, to the point of exhaustion. "Damn gas engines," he gasped between cranking spasms, "and the blasted rain, too." Now the wind was rising. Probably the little OLINDA was suffering the advance effects of the tropical hurricane which the weather bureau had been predicting. If only he could get that engine started! Fogarty, now out of breath, crossed himself, whispered a Hail Mary, and tried once more with what waning strength he could summon. SPT went the engine, in an encouraging whisper, then it coughed, gurgled and came to rest. Fogarty murmured three Hail Marys and spat on his hands, took a deep breath, and twirled the crank once more. This time the engine sputtered through three successive revolutions before it belched, grunted, and again subsided with a despondent sigh. One more priming, one more choking, and one last prayerful spon of the crank with just about the last ounce of force that remained in his fever-racked body, and Jack achieved success. The wretched contraption gathered speed and began barking out its regular rhythm. Now to get the pesky belt engaged without losing a hand, or even a few fingers! Jack waited to catch his breath and regain his composure before undertaking this tricky manoeuvre. Grasping the belt firmly between his thumb and index finger of his right hand, he poised himself with feet wide apart and gave the leather belt just the flip that "Rummy" Wren had shown him. The belt went on the driving pulley, and carried Jack's index finger around with it for half a revolution. He didn't feel the pain at first, just a dull numbness. The finger was still intact, but began turning a bright red. "Damn all gas engines," he blurted, and hastened to close the doors to the engine room to reduce the incessant noise from this infernal machine. He hurried into the operating room.

After throwing in the transmitter switch, Jack began calling the stricken OLINDA. OA, OA, OA he sent, wincing as the pain from his injured finger began to make itself known. He signed US, US and sent GA for "go ahead."

US, US quickly came the answer, OA, OA, CQD WE HAVE LOST OUR PROPELLER AND WE ARE DRIFTING TOWARD REEFS OFF CAPE SAN ANTONIO WITH ANCHOR DRAGGING LAT 22 N. LONG 85 W. NEED IMMEDIATE ASSISTANCE, OA.

Jack acknowledged the message and checked the position given on his chart. So that was what had finally penetrated his painful delirium, the little OLINDA with the big smokestack was really in trouble. She was a rival steamer, operated by the competition, but the code of the sea and the comrade spirit of Wireless Operators the world over recognized no discrimination. Immediately Jack called the little Cuban coastal station at Trinidad to pass the word, but he got no response. Something heavy banged down against the roof of his little Wireless

shack, probably one of the tall coconut palms that had stood at the edge of the clearing, he thought. Again he called TD, TD, TD, but Trinidad failed to answer.

US, US, US came the rough-voiced sparks from the little OLINA. CAPT. GOMEZ SAYS PLEASE ASK MERRIT-CHAPMAN AT KEY WEST TO SEND SEAGOING TUG RESCUE RIGHT AWAY, OA. Fogarty acknowledged this message, and replied:

OA, I AM TRYING TO RAISE TRINIDAD AND WILL ASK HIM TO RELAY YOUR MESSAGE VIA HAVANA TO KEY WEST, US.

The wind whipped through the door of the Wireless shack as a dripping native figure entered. He promptly struggled to close the door behind him while papers went sailing all over the room.

"Senor, I couldn't make it tru de jungle path. Is all block off, - trees down everywhere. I come all way roun' by beach. Sorry I come so late, - bes' I could do. I make your coffee right away." Jesus Garcia smiled a toothless, apologetic grin.

"That's all right Hayzoo, we've got a ship in distress out here to the West. Is the storm getting pretty bad?"

"Is bad an' is getting worse all time," responded Jesus. "You know wan guy wire broke from your mast?" He was taking off his single garment and wringing it out. "Big mast waving like palm tree. I tink pretty soon she go too."

Fogarty sprang to the window on the windward side and forced the storm shutter open far enough to take a look. Sure enough, there hung the broken guy wire over the roof of the Wireless shack, and he hastened to the opposite side to view the mast through the window open to the lee. The mast was whipping back and forth in an alarming manner. If something wasn't done promptly, it would surely come down in the rising storm.

"Hayzoo, never mind the coffee. We've got work to do. Want to help me repair that guy?"

"You go out in dees rain? You crazy? You seek, Senor!"

"I'm seeker than you think, Hayzoo, but I gotta fix that mast before it comes down. There's a ship depending on this station for help. Come on, you can assist."

"You wear Sou'wester an' oil skins, Senor?"

"Yes."

"You let me wear Sou'wester an' oilskins belong Senor Wren?"

"Yes."

"An rubber boots, too?"

"All right, rubber boots, too."

Jack sent a brief message to the OLINDA's Operator, explaining that he would be "off the air" long enough to effect the urgent repairs to the mast.

PLEASE HURRY came the reply. WE ARE DRAGGING BOTH ANCHORS AND DRIFTING TOWARD REEFS, OA.

With the top of the broken guy dragged in through the door of the shack, Jack went to work bending in a new thimble, clamping a fresh bight of the galvanized cable to itself. There wasn't time to do a proper slicing job. Jesus helped him with the task. Then they both donned the foul-weather togs. The

native paused long enough to admire himself in the shaving mirror. "Come on, Hayzoo, we've got work to do outside," urged Jack.

With the necessary tools dangling from his safety belt, Jack started up the 200 foot Oregon fir mast, dragging the repaired end of the guy cable with him as he slowly and painfully made his way upwards. Some of the climbing lags were loose, where the termites had been gnawing at the wood, and he had to skip the bad ones and stretch for the next above, shifting his moldy leather safety belt up an extra distance. As he progressed, the additional weight of the guy dragged heavier and heavier. He would have to make it fast at the 150 ft. level. Meanwhile, Jesus Garcia was slacking off on the turnbuckle down at the guy anchor. The wind was whipping the mast back and forth, a fact that became increasingly evident as Jack gained more height. Without his seagoing experience, Fogarty might well have become seasick from the dizzying motion. As it was, his head throbbed, his ears rang, and he felt a recurring attack of the weakening tropical dysentery approaching. But up he went, dragging his tortured body aloft.

Finally Jack reached the 150 ft. level where the four guys had converged. The three remaining guys appeared soundly enough secured to the mast-ring. The fourth shackle dangled vacant. Its pin resisted all attempts to unscrew it, so firmly were the threads rusted in place. Jack flogged away at it with the hammer he had brought up with him for just such emergency, and each blow sent a piercing pain up through his injured index finger, all the way to the elbow. At last he was able to dislodge the balky part. He secured it with a length of marlin so that it would not fall to the ground while he was struggling to set the eye of the cable in place. The trick was to support the weight of the guy wire while slipping it into position, hold it there, and get the pin through it from one side of the shackle to the other, and screw it home, all while the mast was doing its best to dislodge him or even tear itself loose from its remaining moorings and go crashing over onto the seashore. Jack grunted and strained. His head was bursting, his stomach was squirming, and the pain from his injured hand seemed to cry out for mercy. This was the Paradise that Fred Muller had promised. Could Hell be any worse?

At last he got the pin through and the first few threads engaged, and he paused to catch his breath. A lucky whip of the mast back toward the fourth guy had made it possible for him to just barely get the blasted thing lined up and started into place. Now he screwed it home, dropped his tools to the ground, and started down the mast. Getting down was child's play by comparison with what he had been through on the way up. Reaching the ground, he dragged himself over to the anchor where Jesus was struggling to secure the extended turnbuckle to the anchor eye in the dead-man.

"No can do, Senor, too short now," he was explaining.

"I know, Hayzoo, we gotta use the come-along. It's in the top of the supply chest. You catchi, like a good fellow, I'm whupped down," replied Jack.

Jesus was soon back with the device, and Jack showed him how to attach it, and how to apply the necessary leverage to haul back on the guy enough to engage the turnbuckle hook in the eye-bolt. It was just about all Jack could do to direct the operation, making himself heard above the howling gale, as both were pelted by the driving rain. Now the rain was coming in horizontally from the sea to the East with sufficient force to sting their faces. At last they got the hook engaged, and Jack showed his

willing assistant how to take up on the turnbuckle screw to make the guy taut. A lucky whip of the mast had made it possible to connect up the two parts.

Back into the Wireless shack, Jack sat down at the operating desk and started to call the stricken OLINDA, with the American Morse code used by all American-equipped ships.

DIT-DAT, DITDAH h signalled, and signed the Swan Island call, DIDDLEDAH, DIDDLEDIT. The Operator on OLINDA was quick to respond; THANK GOD YOU GOT FIXED UP, WE ARE IN REAL TROUBLE NOW, ONE ANCHOR CARRIED AWAY, THE OTHER DRAGGING FAST, OA.

STAND BY WHILE I TRY TO RAISE TRINIDAD AGAIN, signalled Jack, this time awkwardly using his left hand at the telegraph key while he nursed his pain-racked right hand.

Now Trinidad came back, so Jack shot him the message to Merrit-Chapman at Key West, routed via the hay-wire telegraph line along the narrow gauge railroad to Havana and thence by the Ocean Cable Company's line to Key West. The message gave the position of little OLINDA, stated her plight, and included an urgent request for the seagoing tug RESCUE to proceed to her assistance. OLINDA's Operator heard the transmission, and came in with THANKS OLD MAN, OA.

Jack was curious to learn who the Operator was on the little Banana Boat, so he queried OA, SINE PLEASE, US.

The OLINDA replied with SINE RG, RAY GREENE, OA.

Ray Greene! Ray had been Jack's assistant operator on board the CUBA, running back and forth between Miami, Havana, Key West and Tampa for the P. & O. Line.

HI RAY, THIS IS JF, JACK FOGARTY, he shot to OLINDA.

HI JACK, I WAS SURE I RECOGNIZED YOUR FIST AT FIRST BUT LATER IT DIDNT SOUND LIKE YOU AT ALL, OA.

GOOD REASON RAY, I DAMN NEAR BROKE MY RIGHT HAND TRYING TO START THIS ROTTEN POWER PLANT WHEN I HEARD YOU CALLING.

Jesus was putting a cup of hot coffee in front of Jack, who reached for the bottle of quinine pills to wash down a couple more. "You tink dees medicine good, Senor?" the Islander was asking.

"You tink is good, Hayzoo?"

"I tink maybe no good, Senor," was his answer as he reached in the pocket of his soggy shorts which he had hung over the back of a chair. "Here, I bring you some good Caribbee medicine, it feex you better, pretty quick."

Jack tasted it, and chewed into the peppery brown berries, all dry and brittle. Maybe this could help him. He could hardly feel any worse. He washed the stuff down with a gulp of black coffee.

Presently he heard the Operator at Trinidad calling US, so Jack told him "GA."

SVC, SVC, came the message, indicating a bit of routine service information. CABLE FROM HAVANA TO KEY WEST INTERRUPTED. YOUR MESSAGE UNDELIVERED. PLEASE ADVISE, TD.

Jack was quick to reply with URGENT, PLEASE GIVE MESSAGE TO "M" FOR PRIORITY TRANSMISSION, US. "M" was the Marconi Wireless Telegraph Station at Havana, and Jack was well aware that "M" might not be able

to contact Key West through the daylight hours, but with the PRIORITY prefix, he knew that every effort would be made to get it through at the earliest possible moment. Evidently Ray Greene on the OLINDA was listening, and had heard Jack's reply to the SVC message. To Ray's query, he explained CABLE BETWEEN HAVANA AND KEY WEST OUT, "M" WILL TRY TO GET THE MESSAGE THROUGH BY WIRELESS, US.

THANKS OM, came the reply from Ray, WIND IS SHIFTING HERE, BUT WE ARE STILL DRAGGING ANCHOR, OA.

"I go back home now, Senor, and catchi somet'ing good for your lunch. Please can I wear Sou'wester and oilskins to show my family?" Jesus was saying.

"Sure, Hayzoo, go ahead and wear them, but I don't feel like eating anything, so never mind the chow."

"You eat all right when I come back, Senor. Please, the boots, too?"

"The boots, too," Jack told him. He left to make his way around to the other side of the island by way of the beach.

Jack watched the native boy as he struggled through the tempest along the edge of the surf. This was a Helluva Paradise, he mused, with Jesus dressed up in foul weather togs. But this Jesus had brought him medicine, and was now on his way to fetch hot food for him. And he had helped to the extent of his limited ability in the difficult repair job on the mast, so that the Wireless Station could stay on the air and bring succor to the distressed OLINDA. Indeed, the native lad was playing the role of the Savior pretty well.

It was along about two bells when Jesus reappeared. This time he had his sister Mary with him. She was anything but beautiful, being rather stout and, like her brother, missing a few teeth, which gave her smile the appearance of a broken-down dock at low tide. But she had the straight, silky black hair typical characteristic of all the natives in this small island fishing village. And she had those remarkable, mysterious amber eyes, characteristic of the ancient Aztec Royalty. The origin of these islanders is obscure beyond historic penetration, although legend has it that they are descended from a combination of the Caribbee Indians, some Spanish Pirates and a few renegade Conchs from the Bahamas. However, generation upon generation of isolated inbreeding had accentuated certain physical defects as well as a few compensating admirable features. Their own code of ethics and morals leaves something to be desired, and as Jack surveyed Mary, he realized that she had a peculiar fragrance which he would prefer to forget. But she did look kind of cute, wearing the Sou'wester and boots, part of the costume borrowed from her brother. Her bronze complexion was picturesque.

"I bring you hot soup of the sea, with special spice," she was saying as she proffered a bowl wrapped in Elephant plant leaves to retain the heat. "You like, - make you feel better queek," she added.

The stuff did smell good. Better than the doner, anyway. Jack tried it, and tried some more, and before long he had finished the whole bowl.

"You t'ink good, Senor?" Mary was asking, full of anticipation.

"I t'ink good," Jack assured her, smacking his lips. "What is it, anyway?"

"I catchi, on the beach," she explained. Jack wondered if it had swum, crawled or flown. Perhaps, he thought, it would be discreet to avoid prying into the origin of this native delicacy, now that

he had it down his gullet. "I like," he said.

"Thank you Senor, *gracia*," she murmured through her broken, blackened teeth. "I bring you something good for supper, too." Jack didn't relish the idea of getting under obligations to this half-breed creature, but he was at a disadvantage. The magic Caribbee cure that Jesus had brought him was evidently working well. Already, he felt better. Now Trinidad was calling him, so he flashed TD, GA, US.

"M" SAYS HE EXPECTS TO GET RID OF YOUR PRIORITY SOON AFTER DARK, TD.

Jack thanked him, and called OA to tell him the latest.

US, THANKS ON HOPE WE CAN HOLD ON HERE BUT IF WIND SHIFTS BACK AGAIN WE WILL PROBABLY DRAG ONTO REEFS, OA, came Ray's response.

Over in Key West, where the maximum elevation is seven feet above sea level, the driving rain flooded Duval Street from curb to curb, for the scant-pitched storm sewers were, as usual, incapable of draining off the torrent that swept across the two-by-four mile island. A hundred miles out to sea from the Florida mainland, this important little seaport sat at the cross-roads of all North Atlantic shipping that entered or left the Gulf of Mexico. Only 90 miles of the Florida Straits separated the town from Havana, while the nearest big American city was 150 miles away at Miami, via the newly completed Oversea Railway, Flagler's extravagant dream.

The deForest Wireless Station on Greene Street was separated from the Ocean Cable Company's office only by the narrow Telegraph Lane. Planks had been laid across this diminutive alley, - perched on soap boxes, to facilitate communication back and forth between the two establishments, for with the Havana cable out of commission, much business was being transferred from one to the other. But around the corner on Duval Street, main drag that stretched "all the way from the Atlantic Ocean to the Gulf of Mexico," there was no such temporary conveniences. The maids of Key West blithely removed their slippers and tripped across Duval Street, ankle deep in the flood waters, when they wanted to get to the other side. The little yellow open trolleys had high wheels which kept their motors clear of the water, and they were still running, and would continue to run until the hurricane ripped down the trolley wires. With red-and-white side curtains pulled down to protect their occupants against the storm, these little four-wheeled vehicles bounded and bobbed their sparking way down Duval Street and out to the La Brisa Dance Pavilion at South Beach. As they passed each entertainment establishment along the way, each motorman slowed down a little, and clanged his gong, to give patrons an opportunity to gulp down the remains of their drinks and dash out into the storm for a leap to the running boards on the fly, later to crawl inside beneath the storm curtains. Few automobiles had appeared on the island in 1912, for there was no highway connecting the island with the mainland, but there were many bicycles, and a few moth-eaten horses and mules to drag drays back and forth bearing loads too bulky or heavy to balance on the handle-bars of a bicycle, or to hoist up onto the platform of a trolley. Key West had for years been a popular stopover for passengers of the P. & O. Steamers connecting with Havana, Miami and Tampa. Now the newly completed railroad was bringing an increasing number of tourists in by Pullman over the spectacular concrete and steel viaducts that hopped from one island to another to connect Key West with the rest of the nation. The most prosperous city in Florida, Key West had already become famous for its cigar manufacturing industry as a result of the Cuban refugees who had es-

aped their Spanish oppressors, and had remained to enjoy American prosperity. The illegitimate profession of Shipwrecking, earlier stimulated by deliberately luring hapless vessels onto the reefs by shifting the beacons, was now a thing of the past, but the Conch descendants of those crafty predators still took pride in the big Steam Tug RESCUE stationed at Key West by the Merrit-Chapman Company for salvage work. She kept up a continual low-head of steam that could be quickly raised to operating pressure the instant word was received concerning any ship that got into difficulties in those treacherous waters. And her crew of thirty seafaring hearties prided themselves on their direct descent from the professional shipwreckers of yore. Wherever they were around the island, they stood ready at a moment's notice to drop any pursuit of pleasure or vocation and hasten to the foot of Duval Street where the staunch RESCUE waited patiently for the next call. It was her hoarse, sonorous whistle that sounded the alert on such occasions, when her crew would come running, pr pedaling, or trolleying, eager to embark on the latest venture, whatever it might be. The Salvage Tug RESCUE had a record to be proud of, for she had snatched many a vessel from a premature watery grave, and had rescued innumerable passengers and crewmen from doomed vessels for which hope had vanished before her arrival on the scene.

Tonight, Haydn Illingworth had just finished transmitting his press dispatches to ships in the DeForest Wireless Station at Key West when he heard the Marconi Wireless Station at Havana calling KW, KW. He promptly answered M, M, GA KW. Then came the priority message from Swan Island with the plea for assistance from OLINDA, the little Banana Boat with the big funnel. After acknowledging receipt, Illingworth summoned one of the messenger boys who were busy rolling dice just outside in Telegraph Lane. "Here, Sammy," he instructed. "This message is for Merrit-Chapman. But their office is closed now, so you'd better take it over to Sloppy Joe's place and give it to Captain Russell Sawyer. If he isn't in the back room playing Rouleete, try the bar." Then he called his relief Operator, urging him to hurry over to the station and take the watch. Haydn was standby Operator for the Seagoing Tug RESCUE, and anticipated that her sonorous whistle would soon be sounding the alarm to summon her crew. Augmenting his income by serving as the island's only Piano Tuner, there were occasions when he had dashed off in response to the RESCUE's whistle, leaving someone's piano half-tuned, to attend to the more urgent business of shipwreck rescue or salvage.

Within minutes, the big Tug was indeed sounding the ominous call. Wherever her hoarse whistle was heard across the island, folks cocked an ear and commented, "There's the RESCUE, there must be another wreck ashore somewhere." And at odd places throughout the town, the RESCUE's crew members interrupted whatever they were doing and headed for their vessel. Some drained the last of their rum and coke, some kissed their wives and children, some crawled out of warm berths in places where they had holed up for an evening's diversion. The Croupier at Sloppy Joe's back room hastily settled with his patrons and turned his sceptre over to a substitute. One and all, they converged on the wharf at the Gulf end of Duval Street. And as the last one came running, he was met by derisive guffaws from his more prompt shipmates, - "Whatsamatter, Bubba, - wouldn't she turn you loose any sooner?" The RESCUE was already free of her dock moorings, and her propeller was churning the water even as he scrambled aboard. They were off on another mission, which would be explained to them over hot coffee in the saloon as soon as the Skipper got his command clear of the sea buoy.

Meanwhile, the Wrecking Master's reply was sparking its devious way from the deForest Wireless Station in Key West to the frantic souls aboard little OLINDA. Key West gave it to "M" at Havana, the Operator at "M" turned it over to the narrow gauge railroad's telegraph line to Trinidad, the Wireless Operator at Trinidad shot it across to Swan Island, and there Jack Fogarty telegraphed it through the stormy night to Ray Greene aboard OLINDA. "RESCUE DEPARTING KEY WEST MIDNIGHT SHOULD REACH YOU SHORTLY AFTER NOON - RUSSELL SAWYER, MASTER."

Ray Greene acknowledged the message with prayerful thanks, and told Jack Fogarty WE ARE DRAGGING ANCHOR AGAIN HOPE RESCUE GETS HERE IN TIME, OA.

Jack remained at his key during the night, alert for any word concerning the plight of OLINDA or the progress of RESCUE. Ray Greene began bemoaning his lot aboard the little Banana Boat, confiding in Jack that he intended to quit as soon as the vessel reached Boston "IF WE EVER DO REACH THERE." He inquired of Jack concerning life on Swan Island, suggesting that he would prefer to be there than "ABOARD THIS DIRTY LITTLE POTFULL OF BEDBUGS RATS AND BANANA TARANTULAS."

WHY DONT YOU ASK FRED MULLER TO TRANSFER YOU DOWN HERE WHEN YOU GET BACK TO BOSTON? suggested Jack.

THAT'S A GOOD IDEA, snapped back Ray.

WANT TO SWAP JOBS? inquired Jack.

ARE YOU SERIOUS? asked the incredible Ray.

YOU SAVE MONEY HERE, OLD MAN. NO PLACE TO SPEND YOUR PAY.

THATS FOR ME, enthused the Banana Boat's Operator. I GET SEASICK.

YOU WONT GET SEASICK HERE, commented Jack truthfully although he avoided mentioning some of the maladies he and Rummy Wren had contracted in the stinking, steaming environments of this island outpost.

MULLER CALLS THIS AN ISLAND PARADISE IN THE CARIBE.

IS IT? asked Ray.

WELL, JESUS IS HERE. HE BROUGHT MY LUNCH TODAY. HIS SISTER MARY BROUGHT MY SUPPER.

WHO BROUGHT YOUR LUNCH? REPEAT PLEASE.

JESUS DID. AND HIS SISTER MARY BROUGHT MY SUPPER.

YOU MEAN HIS MOTHER DONT YOU? HER NAME WAS MARY. HE HAD NO SISTER.

NO, THIS ONE HAS A SISTER. HER NAME IS MARY.

YOU BEEN DRINKING RUM HAVENT YOU?

NO, I LEAVE THE RUM TO MY SIDEKICK WHEN HE IS VACATIONING IN HAVANA.

YOU FELLOWS GET TIME OFF TO GO TO HAVANA?

RUMMY TOOK TIME OFF. I HAVENT BEEN UP THERE YET.

YOU LIKE THE SWAN ISLAND GIRLS BETTER?

YES, THEYRE BEAUTIFUL. ASK FRED MULLER, HE WILL TELL YOU ABOUT THEM.

Fogarty was chatting away, trying to keep up Greene's spirits through the critical hours while OLINDA's fate hung in the balance. He realized that Ray needed something to keep his mind off of the threatening disaster, if possible. In the process, his

Irish wit came to the surface, and he found himself laying the groundwork for an escape from his wretched imprisonment on this diminutive, inaccessible island on which Fred Muller had sold him a bill of goods as a "delightful island retreat." Maybe, if the luckless Ray survived the OLINDA's present plight, he could be talked into swapping jobs. Jack wouldn't necessarily have to STAY with the little OLINDA, but she would provide the means for springing him from this isolated, steaming, unhealthy prison in the Caribbean Sea,--the veritable "Paradise" that Muller had described with so much color and romance.

The first grey streaks of a stormy dawn were just showing up to the East when Jack heard RSQ calling OA. It was the RESCUE, trying to contact OLINDA. Then he heard Ray Greene come back with his GA, and RSQ asked for a new position report. After a few minutes, Ray returned from the bridge of his little ship, and sent the requested information. Jack checked the position on his chart, and discovered that OLINDA was indeed drifting dangerously close to the coral reefs. The wind was now blowing a whole gale. It didn't look good for Ray and the OLINDA.

Then his worst fears were confirmed when he heard Ray advise the RESCUE concerning the latest developments. OLINDA's last ground tackle had carried away, and she was now drifting helplessly toward the reefs. PLEASE HURRY was Ray's plea.

WE ARE MAKING 15 KNOTS AND SHOULD REACH YOUR POSITION BY NOON, came back the answer from RESCUE.

WE MIGHT BE AGROUND BY THEN came back Ray's reply.

CAN YOU RIG A SEA ANCHOR? inquired RESCUE.

WE HAVE ONE OUT NOW. IT SLOWS US JUST A LITTLE BIT, answered Ray.

As the morning dragged on, Jesus and his sister Mary reappeared at the little shack of the Tropical Wireless Telegraph Company. Jesus proceeded to prepare coffee on the kerosine stove, and Mary unlimbered some hot coconut-corn cakes from beneath the folds of a couple of Elephant plant leaves. Her brother proffered another ration of his native medicine, which Jack took without argument, while his admiring female visitor spread his breakfast before him on the operating desk. "You feel better, Senor, I hope?" she was inquiring.

"Yes, much better, Senorita," replied the grateful Jack.

"We have dese sickness plenty time. We know how to feex pronto. You trust us, Senor. We like you Senor Telegrafisto."

"I like you, Senorita," said Jack, returning the compliment but shifting his nostrils around to avoid her penetrating aura. He wanted to enjoy the breakfast she had brought. As he ate, he cornered a small green lizard between the wireless receiver and the transmitter, fenced with it until it displayed vivid red and yellow warnings from its bulging Adam's apple in the effort to intimidate him. Jack had learned to spare these little friendly creatures, which attacked the spiders, carpenter ants and termites.

Now RSQ was calling OA, announcing that a Lyle gun was being unlimbered to shhot a line across to the helpless vessel.

PLEASE HURRY came the immediate response from Ray Greene, WE CAN SEE BREAKERS NOW, OA.

It was going to be a close finish. Jack wondered if it were possible in the remaining time to get the gun line successfully across, then haul a stouter line over, and finally the towing cable and get it secured so the RESCUE could put a strain on it to deter the helpless OLINDA. She seemed bent upon self-destruction at this moment. Evidently the boys aboard the salvage tug had done a good job of navigation to find their quarry so promptly. Then came the startling message from OLINDA. Ray was working his key in feverish haste. OUR STERN IS POUNDING ON THE REEF. TAKE A STRAIN ON THE TOW LINE QUICKLY, OA.

Then came a prolonged silence, during which Fogarty's imagination conjured up a scene in which OLINDA's crew was taking to the boats, and getting themselves smashed in the breakers. But his flight of fancy was interrupted by the Wireless Operator of the RESCUE. He was asking ARE YOU TAKING ANY WATER? RSQ.

To which Ray Greene replied YES BUT WE THINK OUR PUMPS ARE HOLDING. WE STARTED A COUPLE OF PLATES IN OUR STERN. YOU GOT US OFF JUST IN TIME AFTER SOME HARD POUNDINGS, OA.

Fogarty crossed himself and murmured a silent prayer of thanks to Heaven for sparing his friend and the whole crew of OLINDA. He flashed OA, CONGRATULATIONS OLD MAN. YOU HAD EVERYBODY WORRIED, US. Then to RSQ he sent GREAT WORK OM, US.

A six inch scorpion, disturbed by Jack's latest keying, scuttled out of the transmitter. Jack slashed at it with a handy screw-driver and half a dozen young scorpions leaped off their mother's back to scurry in all directions.

The Operator aboard RESCUE gave Fogarty a message to relay to Key West, reporting that they had OLINDA safely in tow, but she was leaking, extent of damage from reef unknown, and that they were heading for Key West.

There were other communications passed back and forth between the three Operators that morning, mostly unofficial chatter which was commonplace in those days before the International Convention at Geneva which put an end to the unofficial free use of the ether waves. The year 1912 marked the end of a great era in the early history of wireless telegraphy and ushered in modern strict regulations which clamped down on all the charming informality that went with the swift development of this new art of communication through space. It also marked the end of American Morse code on the air waves, and brought about the universal adoption of the slower but more reliable International Morse code which eliminated all spaces within letters that so often had been interpreted as two other letters. American Morse survives today only on land lines in the United States, still the delight of a swiftly vanishing fraternity of old-timers, who still use its tricky but speedy language to pass along information faster than ever accomplished with the slower Continental code.

It was later that morning when Ray Greene revived the subject of swapping jobs with Jack Fogarty. The episode on the reefs evidently prompted him to proposition his friend seriously for the job at Swan Island. Between them, they agreed to ask Superintendent Fred Muller at Boston to approve the switch. And so it came about that while OLINDA was being repaired at Key West, Ray Greene arranged for passage on the Turtle Schooner to the Caribbean, where her Skipper agreed to set him ashore on Swan Island, and to pick up Jack Fogarty there at the same time.

Early in October, 1912, the MAITLAND ADAMS hove to off the beach at Swan Island. It was shortly after daybreak, and Jack Fogarty, full of anticipation, was waiting, bags packed, ready to shove off as soon as he had properly shown Ray Greene around the Wireless station. Also waiting on the beach when the small pulling boat brought his relief ashore, were Jack's two native friends from around the other side of the island. This time they had made their way through the steaming jungle, along the winding footpath. They had brought parting gifts for Jack, a small glass jar of the Caribbee remedy for his "misery," which was shoved into his hands at the last minute by Jesus Garcia, and a necklace of beautifully polished shark's teeth, strung by Mary on woven strands of her own silky black hair. "Always good luck," she suggested, "bring you plenty good luck." Her eyes were moist, and she tried to smile.

Jack hastily introduced Ray Greene to Jesus and Mary. "They are my good friends. Treat them well, and you'll never be sorry," he admonished Ray.

"Where's Rummy Wren?" inquired Ray, anxious to meet the alternate with whom he would stand watch and watch.

"He's over on the other side of the island, at the little fishing village. Jesus and Mary will take you over there. That path through the beautiful tropical forest is a short cut. They will show you the way." He didn't mention that they would also show him where to beware of the snakes, where to dodge the poisonous thorns, where to avoid getting bogged down in the swamp, and where to run like Hell to escape being devoured alive by clouds of ravenous mosquitos. He handed Ray a brief inventory of supplies and provisions, and mentioned that instructions for re-ordering were appended. Ray was asking about mail.

"MAIL? -Oh, yes, the mail. The turtle boat comes about once a month. She brings your mail, and you have a whole month in which to compose your replies, which she will pick up on her next visit."

The Skipper of the MAITLAND ADAMS was tooting his horn impatiently. He was anxious to get going and pick up a cargo of big turtles which the natives were holding for him over on Grand Cayman island, in exchange for provisions and assorted bright, shiny ten-cent-store nick-nacks he always brought along for barter. Money was of no use to these isolated people.

Hurriedly Jack shook hands with his relief man and with Jesus Garcia. Then, responding to a sudden impulse born of compassion rather than romance or affection, he braced himself for the ordeal and planted a kiss on the cheek of the tearful Mary. Her ample bosom heaved and she started to encompass him with her pudgy, smudgy arms, but Jack tossed his bags into the pulling boat, leaped in after them, and the crew shoved out through the breakers.

"Adios, Senor Telegrafista sin Helos," Jesus was yelling after him. Mary smiled through her tears and waved dejectedly. Ray was left speechless, with his mouth half open.

"I hope you'll be as happy as I was in this Island Paradise," Jack called back above the noise of the surf. "If you need a new halo, drop Fred Muller a line up in Boston, and be sure to tell him what size you wear. Dio condiro, Amigos!"



The Panama Run

By: Oney Johnson



The last mailout, #1, Vol. 1, sure hit the spot - and it must have been quite a job to turn out. Bill, you do a fine job. But maybe you're going to wear out making up all that copy. . . .

It would be OK by me if that mailout were a bit more full of actual "old timer" pictures with less line copy and drawings - kind of a photo scrap book the SOWP members could contribute to and exchange between themselves so we would have photographic copy of the old days and the old timers - as it was way back when.

So I'm enclosing a snapshot taken back in 1928 of an early piece of radio gear, strictly bootleg. The fellow holding it is Wesley Wright who was Jr. Op. with me on the MS City of Panama/RXZ; Grace Line coastal service SF to the Canal.



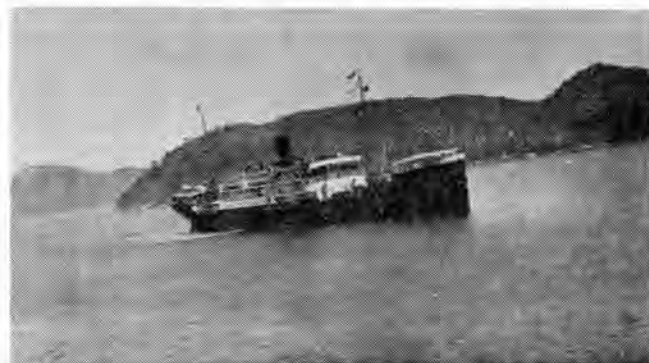
1928 - Wesley Wright, Jr. Operator on M/S City of Panama - RXZ, Grace Line. Taken by Oney Johnson.

Henry Malarin signed Lyle Snow as Chief and myself as Junior from the RCA static room on Brannan street - Dec., 1927. Grace Line was P-O'ed because Manchester and Nichols had gone ashore in Mazatlan and a damn Pacific hurricane came up forcing old Capt. Holland to pull up the hook and ride it out (3 days) - with no radio ops aboard. RCA's instructions were that Snow was to see that the Grace Line didn't cancel their RCA contract for the Panama and the City of San Francisco!

Special 2 a.m. SF time sked with KPH. QSO was a must! But with the transmitter we had, ET-3627 200 watt intermediate freq. affair; or our 1/2 KW. "submarine" Navy rig, and the IP-501 for a receiver - well, if QRN was way down we could work PH all the way to Champerico in Guatemala. Below that it was QSP. And of course the usual QRN, etc., that we are also so familiar with.

Lyle Snow was a real old-timer - had been on the "China" and the "Nile" for the Pacific Steamship Company. Used the "cootie key" (which I never could master). After some months on RXZ, Snow transferred to the Maui, as I recall it.

But before he left RXZ, as I had taken my "ham" receiver on board and used it to copy WHD, WNU, and



1927 - M/S "City of Panama" - RXZ in Acapulco harbor. \$5 oro would buy you the town then - it was no tourist trap.

KUP press but didn't have a transmitter - to show him that hi-freq would be a hell of a lot better than our 200 watt bottle warmer I figured it would swing RCA and Grace to outfit us with a hi-greg rig. By luck one day, while at San Jose de Guatemala in port with our sister ship City of San Francisco/RXY and chewing the rag by keying our IP-501's between our two ships - I learned that RXY had on board: a. 1 Cardwell variable condenser; and, b. one coil of 3/4" copper tubing; and that they had it in the junk box with no use for it - and wow, I could have it free by the next inter-ship launch!

KPH was "testing" on 8440 kc with the experimental call W6XI. WSC also was testing as (if memory serves) W2XC. Not open for PG traffic yet. I could hear - with that coil and condenser and some requisitioning of other parts from our spares I could make a HF Xmttr and QSO.

Lyle was in the sack, corking off. That afternoon I got a piece of plywood and rigged up a Hartley oscillator in a hell of a hurry - took one of the spare 200 watt transmitter tubes and had my jury-rigged HF Xmttr done by chow-time. When Lyle had chowed-up and ready to stand-by for the evening

PANAMA RUN - JOHNSON



watch I gave him a demonstration of what hi-freq could do; first on 40 meters with some hams, and then later with QSO with W2XC on 36 and W6XI when he came on the air. Then - being a damn stupid squarehead I took the whole lash-up apart and returned the radio shack gear back to its original state! Lyle was a bit perturbed about unlicensed gear.

So, what happens? Two days later WNCT/SS Columbia, passes us a SVC from WSC appointing and scheduling us for a 7:30 p.m. EST sked on hi freq.

So to confirm that I possess no brains at all, I reassembled the haywire rig and at scheduled time made QSO with W2XC to advise him that we did not have a high frequency transmitter and therefore were unable to work him on high freq, sorry! W2XC was kind of puzzled at this explanation. . . .

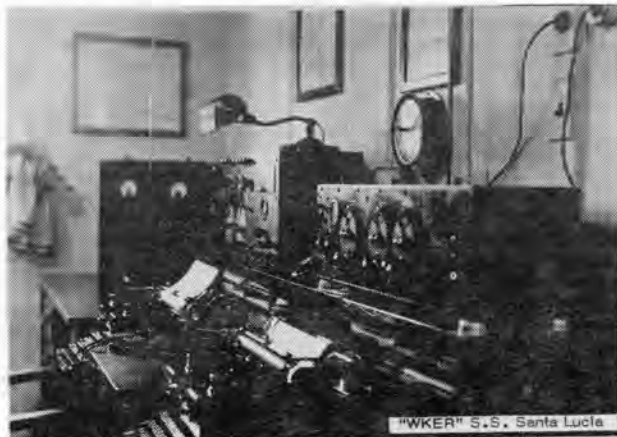
Shortly afterwards, Lyle went on the "Maui" and I went Chief with Wes Wright as Jr. Now it was my job to make those KPH qso's. Out of Los Angeles the first job was to rebuild that high freq. rig a bit better. This done we started working KPH and WSC, who had their PG authorization, also WCC. 99% of our traffic was QSP msgs, TRS and Svc stuff and the farther down the coast of Central America we got, the more the QSP demand until we could not shut down the radio shack when we were in port -- Acapulco, Champerico, San Jose, La Libertad, Cutuco Amapala, Corinto, San Juan del Sur, Punta Arenas, (but not Panama, where we would stay for 2 weeks to a month waiting for up-coast cargo.)

On that first trip the rig was FB. On arrival at SF, the stack of QSP stuff was considerable and Lindh appreciated it. Zerbe OK's the requisition of a 5000 ohm grid leak and .001 mfd. condenser "for high frequency transmitter." Then, signed off abstracts, etc., nothing to worry about until sailing day - except the phone rang and Mr. Lindh advised me that the Radio Inspector had boarded RXZ, and Lo-&-Behold, had discovered an unlicensed high frequency transmitter in the radio room of that vessel. The ukase - immediate removal of said offending equipment or else! The acquiescence, YES, SIR... immediately and that transmitter will never again sign itself as RXZ!



S.S. SANTA LUCIA / WKER

Grace Line - SF to NY run. Later transferred to NY to Valparaiso run. Reported sunk by German submarine in invasion of Salerno. WW2.



RADIO SHACK on SS Santa Lucia/WKLR

AR-1496-D high freq. receiver. IP-501-A low frequency receiver. ET-3850 50-W emergency Xmtr. (Main Xmtr ET-3674-A (GE version) back of operating position (2KW).

So - "alles ordnung," the station reverted to the license specs, as required and requested.

But not for long. On the next voyage, once we were clear of KSE and bound for XAE, the rig emerged from the clothes locker to again be hung (by 4 strings) from the radio shack ceiling next to the ET-3627, the umbilical cord from this baby to its mammy ET-3627 were reconnected. Then a short TR went to KPH on high freq. relayed by a station signing "YU", to the effect that MS City of Panama RXZ was 80 miles south of KSE bound for XAE. The same TR went to SCC and to WSC. We were in business.

So were some other Grace Line ships - YS and YC for instance. Can't recall which was WNCT/Columbia; think this one was YS. And can't recall who YC was ... Anyway, there were damn few USA calls on the high freq. band - mostly the Swedes, Norsks and Germans were there.



KPH - 1930

Left

John Parachini/PI
"Jocko"

Right

Oney Johnson/JO
"Oney"

(During a "break" at the 'code' factory)

Panama Run - Oney Johnson



ONEY JOHNSON

Chief Operator, S.S. SANTA LUCIA - WKER/1932

It was a violation of the Cairo regulations for RXZ; later RXBZ when the 4 letters calls came out, to have a bootleg xmtr . . . but what the hell are you going to do to keep QSO with SF and Chatham and how the heck can they contact and deliver traffic back and forth with ships off the Central American coast if you don't have such a rig.

It was a lot of work, standing watch in port to pick up and deliver traffic to other ships (and for the coast stations). Wes Wright was tops in his willingness to extend our coverage and a lot of credit goes to him.

I signed off RXBZ sometime in 1929, about July. Before I did clear off the ship at Pier 46 in SF, the port engineer, Merrill Johnson, did drop into the radio shack and look at that YU rig (in the clothes locker at that moment) and the high freq "ham" receiver (UV-199 in a Schnell hook-up with the UV-199 output fed through the audio amplifier of the IP-501). Asked some questions, got answers regarding the need for high freq equipment.

Subsequently Grace went RMCA all the way and the City of Panama got equipped with the ET-3655 high freq xmtr and the AR-1496 high freq receiver. Now they were legitimate.

How come the call letters were "YU"? When it was decreed that the high freq rig bootleg xmtr was strictly "off limits" in spite of the obvious fact it was the only way to contact PH, the natural reaction was a feeling of "Why, you SOB."

This was shortened to "YU". YUSOB would be an aircraft call.

Picture is Wes Wright holding the "baby," dear old YU; taken just before docking at KSE. Down for the period of time we would be in USA ports, bound for the clothes closet.

Hal Them were the days!

ONEY CLIMBS " WIRELESS HILL"

The date . . . 1913. The Place . . . Station "PC" near Astoria Oregon. This was my introduction to 'wireless'.

Some sixty (plus) years ago, another Finn kid (7 years old) and I were attracted by the highest flying kite we had ever seen so we decided to investigate - that lured us to the station which we later found to have the call . . . "PC" (as related in an earlier issue of SPARKS).

We found the Ops very friendly. They invited us in so we accepted without hesitation. We admired the room with all the transmitters - all shiny brass and big white porcelain gadgets that held us spell-bound to see.

Then without warning . . . THUNDER & LIGHTNING let loose as the op at the key woke up the sleeping transmitter.

This 7-year old busted the hell out of there and lit running for the timber. Scared? Hell, yes!

Next time I went up "Wireless Hill" the station was just a pile of ashes. Salvaged a Murdock earphone from the ferns. Later, with a hunk of galena and a single-slide tuning coil and a condenser, the home-made lashup tuned in NPE... That, and a book, (THE BOY ELECTRICIAN" by Alfred P. Morgan, was my undoing.

"JO"

30

Bursts as a wave that from the clouds impends,
And swell'd with tempests on the ship descends;
White are the decks with foam; the winds aloud
Howl o'er the masts, and sing thro' ev'ry shroud:
Pale, trembling, tired, the sailors freeze with fears;
And 'instant death on ev'ry wave appears.

Homer - Iliad.



Early Carib. & Gulf STATIONS, Circa 1912

Location of stations/calls used by E. Jay Quinby in his story starting on Page 36 - "MAROONED IN PARADISE".

CALL	STATION	SYSTEM	XMITR	RECEIVER
US	Swan Island	Tropical WT	1 KW	Perikon, Aud. Electrolytic
KW	Kew West	DeForest WT.	2 KW	Audion
M	Havana	Marconi WT.	10"	Coil. Fleming
TD	Trinidad	Telefunken WT	1/2 KW	Crystals.
OA	SS OLINDA	United W.T.	1/2 KW	Crystals
RSQ	SS RESCUE	Massie W. T.	10"	coil. Crystals.

THE ROCK CRUSHER

Ground by William A. (Bill) Breniman

Neither Horatius on that famous bridge over the Tiber nor even the boy on the burning deck show more spirit than do radio operators when it comes to talking about what they want in the line of Uncle Sam's rectangular wampum. It seems as though brains, popularly believed to have the edge on brawn, do not—it appears—always secure a head-hold on the emoluments of endeavor. Quite often brains go to the mat. Take for instance the official dog catcher of Nassau County, Long Island. Last year his daily net catch of stray dogs averaged 341; and take it or leave it OM, his income was \$17,760. Hot dog-catcher!

The trouble with radio operating as a means of a livelihood, it seems, is that it has too many prophets and not enough profits.

Much gloom seems to enshroud the camp of the operating fraternity in the last few issues of "CQ." However, I can see many rays of hope through the darkness of the despairing conditions. Aviation is growing by leaps and bounds. Some day, no doubt, it will be the leading means of world transportation. Aviation will absorb thousands of radio operators. The surface now is merely scratched.

For the sea-going man, there are now building, a number of fine palatial liners on which it will be a joy to work. According to a report in "Nauticus" there is more marine building activity at various yards now than any period since the war, except in 1926.

Picture producers will shortly need a great number of "sound" men it is understood. Most of the films on hand have been released and new material is needed.

Leaders in the radio industry claim that television is here and that the next few years will witness a "wild-fire" growth in television, much the same that radio broadcasting went through in 1922-23. This will create new jobs by the score.

There are thousands of small towns throughout the United States where the service of even one good radio repair man is urgently needed. The trouble with this branch of service is that all repair men want to be in large cities, where every advantage exists. In one small town in Southern California with a population of 15,000 there were not long ago 27 radio repair men. In a town in Wyoming, with a trading population of some 25,000, not a repair man of any kind was to be found. People living in this section had to return their defective sets to the manufacturer or

send them to Salt Lake City or Denver for repair.

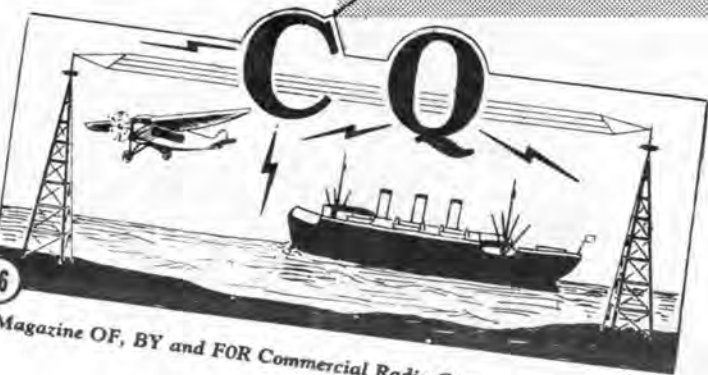
Schools, I believe, should change their curriculum slightly. Resident schools should bring their courses more up-to-date, include a good course in aviation-radio as well as paper-work for the marine-minded embryo operators. Schools teaching radio by correspondence and specializing in repair work, with a "side-line" course in operating would do well to drop the side line. There are a number of good schools teaching radio operating as their main subject. A review and advance work by correspondence from one of these schools could be very profitably absorbed by most "old-time" radio operators who have "marked-time" since the war.

Since mosquitoes achieved a little notoriety in these columns last month, Beefy (not beeper) Willie Somers sent in the following pointers: The mosquito's life is practically nothing but a bore. Mosquitoes may sing but they never accompany themselves on the ukulele or saxophone. No one owes the mosquito a thing but he is always sending in his bill at every opportunity. The mosquito is Scottish in a way: whenever he lands on you he always shuts off his engines. Indelicatessen dealers would call that a lot of baloney.

Just received a letter from V. M. Goldsmith, chief for several years at KPH and KHK, and now at the Airways Radio Station, Oakland, Calif. He asks whether there are any fish in Big Spring. No, "LG," none of the aquatic variety. By the way, Goldie and I were shipmates on the old Santa Cruz "WBD" in 1920. On a run to India, we worked 2740 miles through static on a straight gap—how's that for dx? Contrary to popular belief, all operators do not go in for chickens when they move shoreward. Goldie is raising rabbits to appease his agrarian propensities. He will gladly supply all and sundry with the latest on rabbit culture for the asking.

It would be interesting to hold a "one-ship dx" contest. The idea would be to see how many years the winner has remained on one ship, and not how far he has worked. All applicants with more than five continuous years' service on a single ship are invited to send in their entry. The winner will be presented with a genuine Scowegian scuttle-butt skid chain. "Runner-up" will draw a dollar watch with which he can send time-sigs to the bridge when the op misses same.

"I SAW YOUR AD IN CQ." Tell this to our advertisers—it helps all of us.



Magazine OF, BY and FOR Commercial Radio Operators and Technicians

FORTY PLUS YEARS AGO

Thanks to Pioneer Member, Col. Fred Elser for sending a copy of the "ROCK-CRUSHER" column "Ye Ed" furnished "CQ", published during the early 30's. Copies also acknowledged from Harry Wells, and Bob Ennis.. If you have any copies of "CQ" circa 1931/34, we would like to fill the gaps. The "Rock-Crusher" was our expression of endearment for the old rotary gaps - probably one that scared the 'hell' out of Oney Johnson as mentioned on the preceding page.



QRD TUTOYOTUK

By..Geo.M. Neale, 639-P



Tutoyotuk is located at the mouth of Mackenzie River in the Northwest territories in Canada's North. It is the marshalling point for vessels supplying the Western Arctic Dew line Radar stations along that coast. Various ships remain in Tuk' (as it is familiarly known in the Arctic) when not occupied in the brief summer months and there are facilities for storage of supplies, warehouses and machine shops, etc., but little else.

When the supply vessels break out in the summer months, which most years occurs about the beginning of August, the services of an Ice-Breaker is frequently needed in order to deal with the problem of ice and these ice-breakers are provided by the governments of both the USA and Canada. In the summer of 1964, the Canadian ship delegated to this work was the CGS Ice-breaker "Camsell," the USA vessel was the US Coastguard West-Wind. When proceeding to the Western-Arctic (home base Victoria, BC) Camsell increases her radio complement by hiring two additional operators so as to provide a 24 hour W/T watch.

In 1964, I had the good fortune to be chosen and we sailed from Victoria, BC on June 20th for the long haul across the Gulf of Alaska to Dutch Harbour and thence via the Bering Sea to the Western Arctic. Aside from encountering a few days of very rough weather, all went well until we reached the eastern outer limits of the ice fields in the area of Point Barrow, Alaska, eastbound.

One afternoon, about 4 p.m., one of the deck officers, who like me, had not yet seen extensive ice, so we were both a bit startled to see the extensive area it covered and the somewhat menacing appearance.

As novices in the art of ice-breaking, we wondered how the ship could cope with the situation and how far it would be possible to proceed. As it happened, the ship did not proceed more than about 50 miles or so when it became impossible to break it up and both ourselves and "Westwind" came to a "Grinding halt," cosily nestling in a small area of open-water, surrounded with ice in every direction. This was to be our permanent resting place for about 3 weeks until one day late in July some leads (as they're called in icebreaking parlance) occurred

and both ships proceeded eastward, slowly breaking ice and only making a few miles each day.

At first, it was fascinating to watch the ship breaking way through the ice. As the vessel pushed against the ice, it would start to crack and open water show through. Then the ship would drive hard through these leads until it could no longer proceed. At this stage, the ship's engines would be put astern and the process repeated. Needless to say, after a few days the novelty wore quite thin.

The summer base for the Ice-breakers was at Cambridge Bay, located on the south of Victoria Island (one of the large Arctic Islands) and this was our objective, when cleared of the ice off Point Barrow. Enroute, the ship stopped long enough to put out marker buoys, radar reflector beacons as navigation aids for the use of the forthcoming season and for supply vessels. All along the coast, at intervals of approximately 50 miles or so were the radar-dew line sites, whose huge Radomes were visible for miles; until Cambridge Bay was reached about August



USCGC "NORTHLAND IN FLOW ICE

Unfortunately we do not have pictures of the CGS CAMSELL or the USCGC "West-Wind". The Northland has made the Arctic run for many years. Pictures are courtest of Members Max Keams and Stephen Parkans (See Page 48).

'TUK' Calling... Neale

15th. All this time the ship experienced cool but sunny weather with no snow or rain, temperatures being approximately 40 to 50 degrees. Perpetual daylight was the feature most noticeable because it was virtually impossible to differentiate between noon and midnight.

Eventually, via Coppermine (on the Canadian mainland) Holman Island and some other places associated with the days of such early explorers as Franklin and Amundsen in their search for the North-West passage, we arrived at Cambridge Bay, the focal point for the summer operations. Cambridge Bay could, I suppose, be called the Aviation "Hub" for the Canadian Western Arctic and the radio communication center controlling Polar flights and east-west flights over and along the Radar Dew system.

We anchored in Cambridge Bay on several occasions and were able to visit Eskimo settlements there as well as the extensive communications facilities operated by the Canadian Department of Transport. SWP Readers, no doubt, will be interested in a few notes re the ship's communication equipment and the circuits used on this trip. "Camsell" was fitted with one five KW "Redifone" transmitter, housed in a separate compartment apart from the radio-room and "remote" from there. This transmitter could be used on a large variety of frequencies from 21 to 4 MHz, all frequency changing being handled by remote control. In addition, a 250 Watt "Globe-Master" transmitter with the same frequency coverage.

There was the choice of two excellent Marconi receivers for general use plus two other special receivers, designed for use with telefax equipment for receipt of ice maps.

The telefax pics were transmitted twice daily and these originated in Frobisher Bay in the Eastern Arctic, producing mostly very satisfactory (though sometimes somewhat outofdate) data covering ice conditions for the entire Arctic areas.

No problems were encountered in clearing traffic during the entire voyage. We had excellent QSO's with Vancouver (VAI) until we reached the Bering Sea and then switched to Cambridge Bay (VAC) which we held for entire time in the Arctic.

Daily, traffic had to be cleared to a special station operated by the Northern Transportation Company at "Tuk", to Ottawa (HQ of the D.O.T.) and with "Dew" line stations along the Tuk route, as well as whichever ships were involved in the convoy.

To be certain that the ship was provided with the very latest ice data, the USA Coastguard sent a twin engine plane to the ship every day with a waterproof canister containing the day's ice map. It "Dive-bombed" the ship, then slipped the canister neatly within a few feet of the bridge, to be retrieved by a seaman with a boat hook.

Eventually, the month of August drew to a close by which time the ship was a thousand miles east of Cambridge Bay and the return voyage commenced utilizing practically the same route as was used coming up. However, this time the ice conditions were changed, the weather became colder and the periods of darkness increased daily. In the first few days of September, frequent snow flurries occurred and there were areas where new ice had started to form--in fact, time was running out both for the ice-breakers and supply ships who still had sites to land supplies.



U.S.C.G.C. "NORTHLAND"

Anchored in Pan Ice in the Bearing Sea, South of Nome Alaska - 1933. Furnished by Stephen Parkans, SWP No. 171-P. Steve has sailed most USCGC to the Arctic, including the USCGC "BEAR".

By the end of September the ship was once again a-beam of Point Barrow enroute to Victoria, British Columbia via the Bering Sea, the Gulf of Alaska and the Straits of Juan de Fuca. The Gulf of Alaska outdid itself in the matter of rough weather and within a day's run south of Dutch Harbour we encountered hurricane force winds coupled with destructive high winds which caused much superficial damage to the ship's deck gear, wiped off a large boat off the foredeck and caused several injuries to the deck crew.

Although it was somewhat of a relief when the voyage ended at Victoria, the knowledge of having participated in a unique experience in the Canadian Arctic and to have seen at first hand what the Arctic's really like, made it all well worth while.

--George M. Neale 639-P (VE7VK)

Early days of the 'Wireless' in the U. S. Navy

As told to Henry W. Dickow (deceased) by the late

Colonel Robert B. Woolberton

UNITED STATES ARMY, RETIRED

BIOGRAPHY

Colonel Robert B. Woolberton, U.S. Army, Retired, began his wireless career as an enlisted man in the U.S. Navy in 1904. It was a rewarding experience, as his biography here shows.

Henry W. Dickow*

(* Deceased - April 17 1971.)

When I graduated from high school in 1904, the superintendent of schools in my mid-western town convinced my parents that I was too young to enter college and recommended a four-year enlistment in the Navy. I was interested in electricity and the local Navy recruiting officer told me I could enlist as an Electrician, 3rd Class, go to the Electrical School at the Brooklyn Navy Yard, and then "see the world."

I enlisted with my parents' consent in May, 1904, attended the Electrical School and, as Electrician, 2nd Class, was assigned to the dynamo room of the USS KENTUCKY in September. The radio room was then being installed on the superstructure deck, and I requested transfer to that capacity, and was assigned there in December. The battleships of the Atlantic Squadron, the "White Squadron," were being equipped with radio for the first time in naval history. They were the KEARSARGE (Flagship, 2nd Division), ILLINOIS, IOWA, and MASSACHUSETTS. All ships were painted white, with red waterline and spar-colored superstructures. They would have made fine targets in present-day warfare, but they were beautiful, and no man who served in the "White Squadron" can forget the picture they made, steaming in formation in the blue Caribbean, their flags standing out at "Under Way," and taking white seas over their bows.

To me, a boy just out of high school, the radio room was pure magic. The equipment was Slaby-Arco, of German manufacture, and all of it was beautifully designed and made. The receiver was of the "Decohering Coherer" type.

It was quite difficult to make the Morse writer, or printer, operate from the decoherer unless the sending operator was sufficiently skillful to use a very definite rhythm and speed to match the characteristics of the receiver. Consequently we seldom used the Morse writer but listened to the dot and dash chatter of the decohering hammer which tapped against the glass tube of the coherer. This was satisfactory if atmospheric conditions were right, but any static crashes of appreciable strength would not only operate the coherer, but if strong and frequent enough would either make reception impossible or actually damage the coherer by fusing the tiny nickel particles. Again, if another ship anchored nearby were to use his transmitter before we could protect our coherer, the coherer would fuse and be ruined.

My first experience in actually copying a message on this equipment was immediately after my transfer to the radio room. I was on duty alone, when the coherer began making suspicious and unintelligible clatters. I had seen the chief adjust the polarized relay, so I tried the same procedure and to my delight I could make out the call "GK" followed by the call of what turned out to be the torpedo boat WHIPPLE. I answered him and received an OFM (official message) for our skipper. That was my first official message, and was one of the big events of my life.

We had no prescribed operating procedure then, nor at any time during my four-year tour. When calling another ship, we simply sent the called station's call-letters two or three times and signed our own. The called station replied by sending our call two or three times, signed his own, and said "GA" (Go Ahead). The entire operation closely followed land-line procedure, and when we were all through we finished with "30."

When two or more ships were together, we had to be careful of each other's detectors, particularly after electrolytic detectors came into use. For this reason, a ship about to call or answer a station at a distance would throw his antenna-grounding switch to the "ground" position, and then transmit the letter W several times to warn the other ships that full power was about to be used. All of the other ships then opened their antenna switches to protect their detectors.

An amusing incident occurred which will help illustrate how difficult it was to operate the equipment then in our hands. I was in the radio room one day when the chief, named Haney, had the watch. A message came up for transmission, on to the KEARSARGE, our flag. The chief was a big Irishman, good-natured, but with a huge temper when excited. He was an excellent operator, and no one could have done a better job of sending the message. The flagship asked for a repeat. Haney sent it again, and once more the flag said: PLS REPEAT. This time Haney really chiseled it out, carefully and perfectly. Again the flag operator asked for a repeat. Haney lost his temper, jumped up on the table, held on to the overhead conduits with his hands, and sent the message with his foot! This time the flag said OK.

Soon after this incident, chief Haney was transferred. His relief was a second-cruise man who was a good operator but a poor operator-in-charge. I had heard that a navy operator named Bean had used a miniature light bulb as an electrolytic detector, in conjunction with a pair of low-resistance headphones, with which he was able to get infinitely better reception than any of the coherers would provide. But our new operator-in-charge refused to let me try such a device. At this time, May, 1905, Electrician 1st Class Charles D. Guthrie was transferred from the dynamo room to the radio room. He and I were both eager to try things new, but we could do so only when the Chief was ashore.

Fortunately for us he was transferred, and while Guthrie was helping him get his hammock and bag to the gangway, I hooked up the electrolytic detector and had it working when Guthrie came back to the room.

This detector did more to increase our radio range and efficiency than anything that had happened in the Navy. The light bulb was one of those lamps used in the Ardois visual signal devices, and the filament was held by very fine platinum wires brought in through the base. We simply filed away the top of the glass bulb, removed the filament, broke off one of the platinum wires as close as possible to the glass, and bent the other platinum wire over it without touching. This combination was well covered with a 20 per cent solution of either sulphuric or nitric acid, and made an excellent detector. Its greatest feature lay in the fact that we now actually heard the signals themselves, rather than the mere clatter of the coherer.

The signals we heard were rough and harsh, of low frequency, and it was only natural to want a higher, smoother signal note. Consequently I secured the help of a machinist in the engine room who made a new set of interrupter rings for us - first with four segments and finally with as many as eight. These rings were used in a mercury turbine interrupter which broke the direct current through the primary of the induction coil at about 25 times per second when two rings were used, to several hundred per second with the new eight-ring arrangement. We experimented with these rings through May, June, and July of 1905, and the results were all we had hoped for. In this work I was aided by Guthrie, who was always as eager as I to try anything that might improve operations. Fortunately, Guthrie kept a personal log of our experiments, and in so doing made himself and me the star witnesses in 1914 and 1915 in a famous patent suit involving the three largest wireless companies in the nation. In this suit it was established that the Navy was first to use a high spark frequency in radio communication. It also led to a fine position for Guthrie, and a Fellowship for me in the Institute of Radio Engineers in 1915.

Our first fleet radio officer was Lieutenant John M. Hudgins, who joined us early in 1908. Although stationed on the flagship, he spent much time in our radio room. Once he had the KENTUCKY detached from the fleet, and with him in our wireless shack we cruised around Culebra Island to make observations of signal fading when the Island was between us and the fleet. We also studied directional effects by swinging ship. Hudgins was a fine officer, and his interest and encouragement were an inspiration to all. We were deeply saddened when on the 15th of April, 1906, he was so badly injured in a turret explosion on the KEARSARGE that he died a few days later.

Speaking of turrets, our steel radio shack on the KENTUCKY was located at the starboard after end of the superstructure deck, with the gun turret so close that we could stick our heads out of our after port holes and touch the eight-inch guns - and spit on the thirteen-inch guns below. We were not required to stand watch while the turret was firing, because it was entirely possible that the entire radio shack might be blown overboard. However, after the turret had been fired several times and the radio shack was still there, the skipper asked us to volunteer to remain on watch to determine whether communication could be maintained while the turret was firing. As all radio operators are a little "touched in the haid," Guthrie and I both volunteered. The ship steamed out to the range, and as we approached the target area, the turret swung as far forward as possible to meet the target, the whistle blew, and

all four guns let loose. We had bottled both after ports, and locked the steel battle door. The big brass lock on the door was torn off, the after bulkhead bulged in, and the rivets shot across the room like bullets. We felt a terrific concussion. Both of us were stunned, and everything in the room not bolted down was adrift, including the operators! The acid was blown out of the electrolytic detector cup, and except for a pardonable half-minute of "stunned silence" the flagship was unaware of any interruption to our communications. However, I saw to it that the navigating officer got a good look at the inside of our shack after the run, and we never again were asked or required to stand watch there during target practice.

Returning now to the electrolytic detector, we soon made an important improvement by using a piece of Wollaston wire for the upper electrode. This wire was one-ten-thousandths of an inch in diameter, drawn with a silver coating. When adjusted so that it would just touch the acid, the silver was dissolved, leaving a fine platinum whisker for the contact wire. This type of detector was again improved by John Stone Stone, de Forest, Shoemaker, and others by imbedding the platinum whisker in a glass tube, so that only its extreme tip would touch the acid. By this means the sensitivity of the detector was greatly increased, and it also prevented curling or destruction of the whisker by strong signals. Other improvements followed, such as shaping the glass tube into the form of a fish hook, with the exposed wire tip pointed upward in the acid, so that hydrogen polarization was thereby greatly decreased.

Sometime in 1906, when we had our equipment operating at maximum efficiency, and while we were doing all of the long-distance relay work for the fleet, we learned that the Boston Navy Yard had installed some Stone equipment with a break-in device, which would automatically allow the receiving operator to "break in" while another at a distant point was transmitting. The device operated by opening the antenna circuit to the receiver when the key was closed. We experimented with several such systems but after both Guthrie and I had suffered from severe scalp burns from flashovers, we abandoned our experiments. We then hooked up something that even to this day I marvel at for its simplicity and perfection. Of course, we did not have the ultra-sensitive vacuum-tube receivers in those days, but we did work thousands of miles with what we had. The system for breaking-in which we contrived did not in any way disrupt the operation of our electrolytic detector. We merely moved the transmitter inductance to a point near a steel bulkhead so that the ground lead was only an inch or two long. Two insulated dimes were mounted on the end of a 20-ohm sounder, the sounder mounted directly to the bulkhead, and the dime contacts connected in series with the ground lead of the transmitting inductance. The receiver was connected to the upper dime, so that when the sounder was in the "up" position we were receiving through the transmitter inductance. When it was "down" the receiver was grounded. The sounder was operated by contacts added to the rear of the lever of the transmitting key, so adjusted that the sounder closed before the front, or power contacts closed. The lead to the receiver was run on a metal bulkhead to shield it from the transmitter field. In all my long years of radio I have never heard a break-in system function as perfectly as that one did.

After we produced our high spark frequency with the multiple-segment rings, the idea spread quickly throughout the Navy. Then our newest innovation - the break-in system - brought us additional honors. Soon all of the ships of the squadron were similarly equipped. The entire navy looked to us for newer

and better ideas and gadgets.

After we had been using our high spark frequency for about a year, we began to hear the new deForest coastal stations using 60-cycle sparks. One outstanding station at Galilee, New Jersey, was using 120 cycles, which sounded much like the buzz of a mosquito. And at about this time, the middle of 1906, the ALABAMA and ILLINOIS came out of the Brooklyn Navy Yard with the new Fessenden sets. The spark sounded more like a hiss than a tone. Those two ships also used the Fessenden "Liquid Barreter" detector, which in principle was precisely the same as the electrolytic detectors we had made and were than using. As previously stated, the ALABAMA was the flagship of the 2nd Division, and when the two divisions were separated for maneuvers, the ALABAMA had to do the long-distance wireless work. As her signals lacked tone, she always had trouble getting through, making it necessary to use all of her available power. As a result, the glass condenser plates would puncture. After one of these maneuvers in the Caribbean Sea, Chief Gallagher of the ALABAMA told me that he had to use most of the glass panes from the windows of the pilot house to keep his transmitter in operation.

The coastal stations and new ships of the fleet were by this time equipped with AC generators. As we were pretty well fed up with direct-current interrupters, I persuaded my navigating officer to requisition an entire new transmitter of the deForest type, but we received only a Northern Electric motor-generator with starting rheostat and reactance regulator. Thus it was necessary for us to rewind the primary of our old spark coil, then build a new spark gap to handle the increased power, and provide a larger and better condenser. We did all of these things ourselves - and wound up with the best transmitter in the fleet, in spite of the fact that all the new battleships had been coming out of the yards with the latest deForest, Stone, and Fessenden sets, all employing 2-kw transmitters of the latest design.

I believe the excellence of our "home-made" transmitter was due largely to our ability to adjust it, and keep it adjusted for maximum efficiency. On the other hand, the new and modern transmitters on the new ships were equipped with tuning clips soldered in place before they left the Navy Yard. Practically all condensers then in use were of the Leyden Jar type and were not at all uniform in individual capacity. Hence, when one or more of these jars became punctured and then replaced, exact resonance was lost. On the KENTUCKY, while Guthrie and I were aboard, we were able to change our tuning clips each time a new condenser was installed. Thus we were always able to maintain resonance.

I did not like the T-type antennas installed by the Navy Yards because the fanned-out lead-in from the flat top came down fairly close to, and on some ships supported by, one of the ship's funnels. Almost as soon as I was placed in charge on the KENTUCKY, I replaced the "T" antenna with one of the "L" type, with the lead-in being a single wire only, brought down into the radio room free and clear of all obstacles. Our antenna was always so "hot" that on a clear night we could go out on deck and not only hear the rippling hiss of the antenna while sending, but we could actually see the four wires of the flat-top portion of the antenna glow.

Our navigating officer joined our efforts wholeheartedly and always provided us with the necessary cash to purchase ashore any special equipment needed for our experiments. Guthrie and I were both excused from participating in any ship's drills. When the junior officers learned that I would soon take the entrance examinations for Harvard, they tutored me in various subjects, particularly mathematics, during the entire last year of my tour on

the KENTUCKY. We were proud of our relations with our officers. I was particularly happy when, on the last day of my service on the KENTUCKY, I was summoned to the flagship MAINE, and led to the quarterdeck, where Admiral Robley D. Evans said some very kind things to me, then said goodbye, and later sent me a letter of commendation for presentation to the Dean of Harvard.

When I was about to leave the KENTUCKY for the last time, my navigating officer presented me with a box of ten of the Slaby-Arco coherers which came with the original installation in 1904, and I still have several of these in my possession as precious reminders of my happy experiences in those first days of radio in the United States Navy.

By the late fall of 1907, Guthrie and I were both getting to be "short-timers." I had been promoted to the rating of permanent Chief in 1907, and Guthrie was due for a similar appointment. He was sent to Philadelphia to put the new Navy Yard station there in commission, and I was transferred to San Juan, Puerto Rico.

The San Juan station was part of a network which included Guantanamo, Colon, and Key West. The transmitters were made by deForest; 60-cycle, 35-kw outfits of the spark type, the highest powered sets in the Navy. The spark gap was enclosed in a heavy wooden box, and even when tightly closed the sound of the spark could be heard clear off the reservation. When the box was opened, the spark could be heard a mile away in San Juan. The primary power for the transformer had to be keyed with a large solenoid whose contacts were one-inch in diameter, immersed in oil. One contact was made of steel, the other of brass. Frequently these contacts "froze" when operated by the hand key, making it necessary for us to pry them apart with a stick. We actually used this stick as a substitute for a telegraph key at times, and we were able to send as fast as twelve words per minute, which was actually the maximum speed at which the transmitter proper could be operated. Only Key West could send faster, yet his speed never reached twenty words per minute, and the tone of his spark was not up to par.

When I took charge at San Juan in 1907, no signals from Colon had ever been heard there, and Key West was received only on rare occasion. All traffic had to be relayed via Guantanamo. I busied myself with the receiving equipment, duplicating what we had done on the KENTUCKY, and soon we were able to communicate directly with Colon and Key West.

A lot of interesting events occurred while I was at San Juan. One morning before dawn, one of our operators was working Key West. The rest of us were asleep in the same building when we were awakened by dense smoke and the sound of crackling flames. When we dashed into the operating room, the sending operator was wholly unaware of the fire, nor could he hear the crackling of the flames because of the racket made by his spark gap. The insulation on one of the high-voltage leads had broken down and had set fire to the oil-soaked wooden floor. The fire caused one of the big crockery condenser "bath tubs" to crack, with the result that much of the condenser oil leaked to the floor. Soon the fire spread through the transmitter room and under the floor. Fortunately it was a Saturday morning, and only the day previously we had connected-up all of the fire hoses for the customary Saturday fire drill in the Navy Yard. We managed to save the building, but it was a shambles for weeks later until we repaired the "bath tub" condensers. They consisted of large glass plates covered on both sides with tin foil. Many of these were punctured and broken.

Static was terrific at all times. We never dared touch our big antenna unless it was well grounded,

as otherwise it would literally tear our pants off.

We had a telegraph circuit that was interesting. It connected us with the San Juan office of the Insular Telegraph Service for accepting and delivering commercial ship traffic, for we were the only radio station on the island. It was a loop circuit which ran completely around the island, and we were but one of many stations on this loop. There was so much leakage on this circuit that we never knew when any other station was calling us unless the San Juan city office first notified us. Then we would have to adjust our main line relay until it responded to the calling station. Each station on the loop had its own main line battery, and each operator had to adjust his relay constantly to know whether he was being called or not.

Life at old "SA" in 1907 was a tough assignment, but it had its compensations. We had a fine bunch of operators, and the best mess on the island. We had many friends. We all had motorcycles. On Sundays, we exchanged visits with the plantation owners who kept us well supplied with the pick of the best tropical fruits I have ever eaten.

All of my four years in the Navy were happy, interesting, and instructive. They proved most helpful to me, both during my engineering course in college and throughout my after-life in radio work. It is interesting to note that practically every Navy radio operator whom I knew and worked with in those first days of radio in this country has become prominent in some branch of the science ever since.

For the information of old-timers who may have lost the record, and for other Navy men who may be interested, I append the following list of U.S. Navy Shore Radio Stations on the Atlantic Coast and in the Caribbean area, together with their call-letters as of 1904-1908:

PORTLAND, ME.	"PA"
PORTSMOUTH, N.H.	"PC"
BOSTON NAVY YARD	"PG"
CAPE COD, MASS.	"PH"
NEWPORT, R. I.	"PK"
NANTUCKET LIGHTSHIP	"PT"
MONTAUK POINT	"PR"
BROOKLYN NAVY YARD	"PT"
HIGHLANDS OF NAVESINK	"PV"
CAPE HENLOPEN	"PX"
ANNAPOLIS, MD.	"QG"
WASHINGTON, DC	"QI"
NORFOLK NAVY YARD	"QL"
CAPE HENRY	"QN"
DIAMOND SHOAL LIGHTSHIP	"QP"
BEAUFORT, N.C.	"QS"
CHARLESTON, S.C.	"QU"
CHARLESTON LIGHTSHIP	"QV"
ST. AUGUSTINE, FLA.	"QX"
PENSACOLA, FLA.	"RK"
NEW ORLEANS, LA.	"RO"
JUPITER INLET, FLA.	"RA"
KEY WEST, FLA.	"RD"
DRY TORTUGAS	"RF"
GUANTANAMO	"SI"
SAN JUAN, P.R.	"SA"
CULEBRA, V.I.	"SD"
COLON, R.P.	"SL"

Prominent commercial coastal stations of the United Wireless Telegraph Company, as of 1907-1908, who handled personal messages as a courtesy for Navy ships in the Atlantic were the following: No. 42 Broadway, New York City "NY" - Bridgeport, Connecticut "BG" - Galilee, N. J. "G" - Atlantic City, N. J. "AX" - Cape Hatteras N.C. "HA".

Call-letters beginning with the letter P were later transferred to commercial wireless shore stations

along the Pacific Coast, while the stations of the U.S. Navy in this same area were given call-letters beginning with the letter T. Still later, when three-letter calls were assigned, the Navy stations of the Pacific were given NP as the first two letters, while on the Atlantic the first two letters were NA, thus making it easy to distinguish between the two coastal regions.

Upon graduation from Harvard in 1912, I joined the National Electric Signaling Company of Brooklyn as Research Engineer. My work with this company was devoted exclusively to the development of the Fessenden heterodyne for reception, using the Chaffee arc as a generator.

From 1913, to 1916, I was Pacific Coast Radio Inspector for the Department of Commerce with headquarters at San Francisco. The famous Ship Act of August 13, 1912, designed to promote the safety of life at sea, had just gone into effect, and it was during this period that occurred the long drawn out strike of the Radio Operators Union.

From 1916 to the Spring of 1918, I was Radio and Electrical Engineer with the Federal Telegraph Company at San Francisco, in which position I first assisted in the design of the high powered arc transmitters for the U.S. Navy, and then installed the 250-kw station at San Diego, and the 500-kw stations at Pearl Harbor, Hawaii, and Cavite, P.I.

Upon my return from Cavite in the Spring of 1918, I offered my services to the Army and was commissioned a Captain in the Signal Corps, O.R.C., and after a short period of duty in the office of the Chief Signal Officer in Washington, proceeded overseas in August and was at once assigned as Army Radio Officer, Second American Army, with headquarters at Toul, France, and continued in that capacity until the Armistice.

Returning to the United States in May, 1919, I served as Pacific Coast Radio Supervisor for the United States Shipping Board until July, 1920, when I returned to the Signal Corps as radio engineer in the office of the Chief Signal Officer. It was while in this position that Washington founded the Army Radio Net, later known as the War Department Radio Net, connecting the War Department with the nine Corps Area headquarters of the United States. In November, 1920, I accepted a commission in the Regular Army as Captain, Signal Corps, and became Officer in Charge of all Army radio stations, ashore and afloat. In 1927 I became Officer in Charge, Second Section, Alaska Communication System, with headquarters at Seward, Alaska.

Returning from Alaska in 1929, I was assigned as Radio Officer, Ninth Corps Area, with headquarters at the Presidio of San Francisco, and remained on this assignment until July, 1935, when I was transferred to Omaha as Executive Officer, Signal Office, Seventh Corps Area.

In July 1938, I was again assigned to the Alaska Communication System. In September, 1938, I was promoted to Major, and on June 12, 1941, to Lieut. Colonel, and became officer in charge of the Alaska system during its tremendous expansion under the emergency.

On October 17, 1941, I was transferred to Hawaii and was assigned as Department Radio Officer with headquarters at Fort Shafter, Oahu.

In January, 1943, I was ordered to South America where I was assigned as Theater Signal Officer, South Atlantic Theater, with headquarters at Recife, Brazil. During this assignment I was promoted to Colonel on June 16, 1943. By the beginning of 1944,

(Completed on Page 53, Col. 2)

The ship's bell after fifty years under water

'Tragedy'



SIXTY YEARS AGO

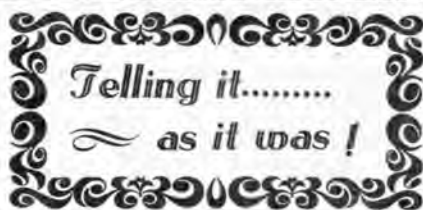
In the early hours of 29th May, 1914, the world was shocked by news of the second worst disaster in peacetime maritime history. More than a thousand lives were lost when the Canadian Pacific liner *EMPERESS OF IRELAND* plunged to the bottom of the St. Lawrence estuary, in the vicinity of Father Point, fourteen minutes after being struck amidships by the Norwegian collier *STORSTAD* in thick fog shortly after midnight.

The radio call for help was picked up by the Marconi station at Father Point, and without delay the Government steamers *EUREKA* at Father Point Wharf and *LADY EVELYN* at Rimouski Wharf were notified of what had occurred. The two ships made all haste to the scene of the disaster, and together with the *STORSTAD*, which groped her way back after the collision, succeeded in picking up more than 700 people, 444 of whom survived their immersion in the bitterly cold waters of the estuary.

Fifty years later three enterprising amateur skin divers spent their summer vacation exploring the wreck to retrieve nautical equipment and other relics for the museum at Rimouski, Quebec. The leader of the expedition was an Ottawa civil servant, Andre Menard. With him were Paul Fournier, of the department of mines and surveys, and Fernand Bergeron, a salesman from Gatineau Point. A Rimouski businessman provided the boat used for the six weeks' diving programme, and this was based in the river just off the village of St. Luce, near Father Point.

Two of the most interesting finds were the ship's bridge bell and a large deck notice reading "First Class passengers only". After their long immersion both show only slight signs of corrosion and the plate is still fixed to part of its original woodwork.

Reprinted by permission - --MARINER, February 1965



"HOW

PRESIDENT QUEZON

GOT HIS DH

Around '24, in my old home town of Manila, I had a "50-watt" B/C station KZUY. It was a block from the ocean and had a big inverted L. antenna about 140 feet above the street. One evening a President liner arrived too late to go through health, customs, etc. so anchored a few hundred yards offshore of my place until morning. On board was the Senate President Manuel Quezon: later first President of the Philippines. The welcoming committee wanted to get word to him of changes in plans for the morning, but NPO had shut down his 600 meter rig as was normal then (and there was no commercial station in Manila in those days). What to do? One of the committee knew me and asked me to try to get a message to Quezon. My own B/C station was not in operation at that time, but there were one or two low-power "disc-jockey" type stations going and I knew that the operators often left their IP-501 receivers turned on to listen to the music. How to attract their attention? I hooked a Ford coil "plain-aerial" to my big antenna and called the ship. Joy! Soon they came back on their half-KW Simons set and when I asked if they would accept a DH to Quezon, they said, "sure." Next night I went to the welcoming party at Malacanang Palace and when I shook Quezon's hand in the receiving line, he remembered to thank me for my part in his reception. That is the one and only time I ever met that intense, devoted man who was largely responsible for Philippine Independence.

--Col. Fred J. Elser, USA Ret. (598-P)



WOLVERTON

(Continued from Page - 52.)

My health began to fail because of too long continue tropical service, and in February of that year I was ordered to a general hospital in the United States where a Retirement Board recommended my retirement for physical disability. I was retired on September 30, 1944.

(*) Colonel Woolverton died in San Francisco on September 1 1962, an avid operator of his ultra-modern amateur radio station W6WN to the last. He maintained that his most interesting experience was on the day he put away his coherer and for the first time actually heard signals using an electrolytic detector improvised from a miniature lamp bulb in 1904, as was stated earlier.

Sinking of the TITANIC



Artist: *[unclear]*
Owner: THE MARINERS MUSEUM
Newport News, Virginia

- from the collection of David L. Brown

GOD SOS DE MGY

One day, in the spring of 1963, Walter Lachelt, a mutual friend and sea-going operator of the "Early Days," brought over a couple of "Old Timers,"-- Earle Wohler (W6Fs) and Erve Rasmussen (W6YPM), in search of old relics for a Wireless Historical Project. I was happy to contribute some early items, including the De Forest Audion and the Western Electric Type VT1 tubes plus other items of around 1910 to 1920 vintage. The visit naturally developed into a session of reliving and reminiscing those "Good Old Days."

Learning of my casual relation with the Titanic Episode, my friends urged me to chronicle some of my early "Wireless" contacts and impressions. The individual who once said, "The things I don't know or have not done, would fill several libraries, and what I do know or have done, could be put on a postage stamp with a shaving brush," just about expresses my sentiments, however, if of any historical

By
Joseph P. DANKO

253 - SGP

interest, here are some of the highlights from my past.

By the time of the unfortunate Titanic disaster, the original open spark gaps, fed by battery actuated vibrator coils (remember the popular Ford ignition coils?), and later by 50/60 cycle transformer fed, had rapidly given way to the 120/500 cycle generator fed Rotary Gaps of Stone, Marconi, and others. The signal's "Logarithmic Decrement" was soon improved by the introduction of the "Disc Quenched Gap" by the new industry, including the "Tubular Quenched Gap" of Fritz Lowenstein, and practically eliminated by high frequency "CW" alternators of Alexanderson and Fessenden and by the Poulsen Arc system.

The transmitting condensers, originally composed of sheets of tin foil sandwiched between glass photographic plates, had defaulted to banks of copper coated "Leyden Jars." When overloaded, spouting corona flashes from these would help foul the shack with an uncomfortable atmosphere of Ozone. They were later displaced by the more compact and efficient aluminum encased Dubelier Mica Condensers.

After the Coherer, the first detector in my experience, was the "Liquid Barretter" aboard the U.S. Dixie (NEP). The very fine platinum filament, silver coated, barely touching a 10 percent solution of nitric acid in a tiny silver cup, proved a rather erratic rectifier on a rolling or pitching ship, or when subjected to heavy static or very strong signals. But the simple, sensitive crystal detectors,--Perikon, Pyrites, Carborundum, Galena, etc. with their ticklish "Cat whiskers," and the 2 element Fleming Valve,--an adaptation of the "Edison Effect," were just coming into their own. Undamped continuous wave (CW) transmission by high frequency alternators and the Poulsen Arc systems, evolved the high speed commutator type "Chopper" which soon succumbed to DeForest's 3 element Audion and Edwin Armstrong's heterodyne circuits.

Basically, a person's role in life is usually predicated by his continually unfolding environment and the timely opportunities encountered. In this fast moving century, so many have contributed to the numerous and varied technological accomplishments and human benefits, that it would be somewhat difficult to separate the "Great" from the "Near Great." Being part of this era, it has been my good fortune to have met many such distinguished personalities under various circumstances,--in the field of professional activities, by direct introduction or nod of recognition at some convention or social event, or perchance, a mere rubbing of elbows at some public gathering. Mere statistics or parading of names can be quite boring, but many of these contacts leave us with some interesting anecdote or inspiring memories.

For instance, at one of our weekly movies in the Gym of the Newport, Rhode Island, Naval Training Station, Admiral "Fighting" Bob Evans, then visiting his son Lieut. Frank Evans, our Executive Officer, left us with this thought: "You will meet many obstacles in your lives. Go around them if

you can. If not, go over them; and if you cannot do that, set your teeth and go right through them. Above all, honor our women and the flag, and if there is any fellow who disputes your rights, give him a good thrashing or take one yourself."

About the middle of Oct. 1911, orders were received transferring me to the Brooklyn Navy Yard Electrical School. After four months of machine shop and shipboard electrical instruction, and a few weeks of "Wireless" theory, I was suddenly assigned to the Yard Radio Station "NAH" as electrician 2nd class with a sprig of lightning on my sleeve, denoting Radio duty.

At this time, high voltage - high frequency demonstrations were quite popular at Electric Shows and in Vaudeville Acts. For the annual Electric Show at the Madison Square Garden, our Electric School would usually prepare a booth of Naval devices as a publicity gesture. Our class of 1912 decided to exhibit the spectacular "Tesla Coil." A 120 cycle alternator furnished the primary power for the Rotary Gap with its relatively large condenser banks composed of sheets of tinfoil sandwiched between glass photographic plates in tanks of transformer oil. The secondary was about four feet in diameter and capable of throwing out a sparkling "feeler" at least 3 feet long. The crackling noise of the gap discharge would attract a mass of spectators to the rope barrier restricting any closer approach than 5 feet to the coil. Then one of us would approach the closest pretty girl and start our lecture. At the height of their interest, we would unsuspectingly extend a metal screwdriver or metal rod, held in one hand, to within arcing distance of the coil, and simultaneously touch the nearest person with our other hand. It was remarkable how gleefully that blueish streak of high frequency lightning leaped out to greet me and then tinglingly circulate from person to person throughout that closely packed human capacity. That was real fun!

Then, one evening while attending the Vaudeville theater not far from the Navy Yard, an entertainer on stage was demonstrating high frequency phenomena. He would place a cigaret in his mouth and light it with a spark from a banana. Obviously, wires threaded in the items, served as the actual spark terminals. Then he asked for volunteers from the audience to testify as to the reality of the performance.

Three or four ascended the stage and sat on a wooden bench. While explaining and demonstrating various amazing feats, he would slyly touch the leg of the nearest man with his wand. Curious, after several such passes without reaction, he asked the fellow if he was immune to electricity. Receiving a negative reply, the entertainer then asked him if he felt anything when he "accidentally" brushed his leg. "No," replied the chap, "That's my wooden leg!" We wondered if this was a frame up.

My most memorable contact came early in 1912, while attending the Electrical School. Our class made a field trip, by invitation, to the Edison Storage Battery Plant in East Orange, New Jersey. There we had the gratifying privilege and honor of being introduced individually to, and shaking the hand of a truly great American--the highly respected "Wizard of Menlo Park"--Thomas Alva Edison. After a comprehensive tour of the manufacturing processes, we witnessed a demonstration of the ruggedness of the steel-clad nickle-oxide alkaline cell. A typical, 240 amperehour unit, mounted on a four wheel hand truck, was subjected to repeated severe jarring when the truck was forcibly rammed against a brick wall. Then the cell was shortcircuited with a 20 penny nail, which glowed red hot until the cell was

fully discharged. While we enjoyed a delightful luncheon with Mr. Edison, the cell was force charged and later shown good as new--no buckled plates. Despite the demonstrated ruggedness and absence of chlorine gas hazard to health, the Navy Department did not accept the Edison type battery for submarine service. The explosive potential of accumulation of Hydrogen gas, released during operation, was considered a more serious risk than the toxic chlorine gas released by lead-acid cells.

However, Thomas A. Edison, with his natural curiosity and infinite patience, has always been my Idol. His many beneficial accomplishments place him head and shoulders above all others of his day.

During the 4th of July holiday of the following year, the U.S.S. Utah anchored off Gloucester, Mass. There in company with our Radio Officer, Ensign Maddox, and an apprentice radioman, we had the pleasure of visiting the Experimental Wireless Laboratory of the noted mining engineer, Mr. John H. Hammond. He treated us to a demonstration of his wireless control of a small boat, a short distance offshore. The demonstration was quite impressive and fascinating, considering that a modified coherer was the most satisfactory device available for passing sufficient radio impulse energy to operate the ultra sensitive magnets and solenoid controls.

We had been cautioned to ground the Antenna during electrical storms, but, there was that ever present temptation to twiddle the tuner knobs as long as some ship could be heard. The IP-76 tuners had a protective spark gap between the antenna and ground posts so it was not unusual, to see a warning static charge occasionally jump this gap and knock out the crystal detector. One evening, a storm seemed to come up from nowhere, and while listening to some weather chatter between a couple of chaps out at sea, a flash hit the station and suddenly, I felt myself propelled, chair and all, against the switchboard guard screen behind me. There I sat stunned, my saliva seemingly turned to water, until a few moments later, two marine sentries from the Sand Street Gate, rushed into the shack to see what happened. They told me that they saw a ball of lightning come down one of the wooden mast's rigging and disappear among some historic cannon mounted around its base. A grounded ceiling high steel screen separated the operator from the transmitter loading coils. However, enough of an inductive or capacity charge must have been picked up by the receiver lead, to pass some of it to me through the receiver cord. It was a puzzling experience, for none of the station equipment was damaged. 'Tis said that, "no dog believes in fire until he is burned." Well, thereafter that Antenna was kept grounded during a thunder storm!

In reflecting over the past, Mr. Fritz Lowenstein had a profound influence on my career in Radio. In 1899, Nikola Tesla and Fritz Lowenstein designed and erected the first "highpower" wireless transmitting station at Colorado Springs. The transmitter was rated at 60 KW. In 1902 and 1903, these two friends joined in the construction of a 300 KW transmitter at Shoreham, Long Island. By 1910, Lowenstein's many advanced innovations and original ideas soon brought him to the attention of the Navy Department brass, who encouraged him to design and manufacture radio apparatus for Naval and military use.

All contractors were required to submit their equipment for mechanical and electrical dependability checks, to the Electrical Testing Laboratory at the Brooklyn Navy Yard and then, temporarily installed at Station "NAH", for an endurance and proficiency test under actual operating conditions.



BROOKLYN NAVY YARD

Commander Leigh, U.S.N. teaching sailor theory and practice of wireless.

Here, early in 1913, it was my good fortune to meet Mr. Lowenstein while testing his first 5 Kw, 500 cycle transmitter incorporating his novel wave-changer and tubular quenched spark gaps. It was during the early morning hours, while making an overload "DX" try, that I was surprised by an acknowledgement of my general call and a gratifying signal report from the Marconi Station in Seattle, Washington. This was reputed as being the longest overland wireless contact up to that time. Mr. Lowenstein is also credited with the invention of the so called "C" battery circuit, for which he was paid \$150,000 by the American Telegraph and Telephone Co.

On termination of my enlistment in April, 1914, an opportunity of appointment as Chief Electrician on the U.S.S. Illinois, was made available if I re-enlisted within the 4 month grace period. The detail would be as Radio Instructor to the Midshipmen during their annual summer practice cruise, this time, to the Mediterranean. Before I could arrange to be sworn in, a letter came from Mr. Lowenstein, offering me a position with his new organization. My decision to accept his kind offer was expedited by the sudden news that, because of the ominous war rumblings in Europe, the "Middy" cruise was cancelled.

My duties consisted of floor testing all the equipment, and, as his representative, to contact various sub-suppliers as Wm. Dubelier regarding transmitting condensers, Leo H. Bakeland for "Bakelite" panels, Thordardson for transformers, the Crocker-Wheeler Co. for motor-generators; and Nikola Tesla for technical guidance, etc. The close relationship between Tesla and Lowenstein was evidenced when I asked Fritz, of Austrian birth, if the war would disrupt his close friendship with Nikola, of Serbian heritage. "Joe," he replied, "We of scientific mind and training, do not entertain national or racial prejudices. Our inventions and efforts are for the benefit of Mankind, and not for the opportunist Politicians who promote the destructive uses of our discoveries."

About this time, Mr. Lowenstein was serving as president of the Institute of Radio Engineers and encouraged me to join. At the regular meetings, it was normal to meet many of the early pioneers, Lee DeForest, Ed Armstrong, E.F. Alexanderson, Alfred N. Goldsmith, Prof. I. Pupin, Roy Weagant, J.V.L. Hogan and others, too numerous to mention.

In October, 1914, Sperry Gyro Compass Co. offered me a position as Assistant Installation Engineer of Gyro Compass equipment on Naval vessels. This, I gratefully accepted, as it gave me the opportunity to break with radio and get into general electrical practice, my preferred field.

However, the following May, 1915, Lowenstein asked Sperry to grant me a few month's leave of absence to engineer the installation of a 10 KW Radio Station in Guatemala City, contracted for by the Guatemalan Government. Prior to leaving for Guatemala, Lowenstein arranged for me to spend a few weeks at Columbia University with Edwin Armstrong, then developing his "Heterodyne" circuits for continuous wave reception, in conjunction with the Audion. Besides replacing the motor operated "Chopper," then used in undamped wave (CW) reception, the inherent amplification characteristics of the heterodyne circuits provided greater signal sensitivity, and oscillator flexibility.

Permission to use the circuit in the first commercial receiver application was most welcome as our contract was predicated on establishing direct radio contact between Guatemala City "GC" and Key West (NAR), and reasonably dependable night time contact with Arlington, (NAA).

As Guatemalan Customs procedure was further complicated by German monopoly of all things electrical, it took two months of negotiations to release our equipment from the Government Customs warehouse.

Nevertheless, in October, after several transmission tests with Key West and Arlington, the installation was considered acceptable, so reservations were arranged to return Stateside on the United Fruit steamer "Marowijne," sailing on the 13th, from Guatemala's eastern seaport, Puerto Barrios. On crossing the gangplank at the dock, a government messenger shattered my dreams of enjoying Thanksgiving dinner with my folks back home in Newar, N.J. A telegram from the Minister of Public Works requested my immediate return to the Capital.

After a rather reluctant all day train ride brought me back to the City, I wandered over to the Radio Station. There, I learned that the Native operators, in attempting some long distance contacts, had greatly overloaded the 10 KW, 500 cycle Thordardson power transformer, and blew the secondary coils. As these coils were impregnated with Bakelite, local repairs were impracticable, so a rush request for replacements was cabled to Mr. Lowenstein.

But of greater moment to me was the shocking tragedy at sea. During the entire night of Oct. 13th, the boys listened to New Orleans (WNU) and Key West (NAR) repeatedly call the S.S. Marowijne without result. The next day, by cable, we learned that the vessel had vanished with all on board, without a trace. Navy destroyers dispatched to search the lanes, did not find even a deck chair or life preserver as a clue to its fate. No hurricane warnings had been heard, however, "U Boats" were rumored to be on the prowl in the Carribean.

But by the grace of a burnt out transformer, that trip home would have been the end of my career too! I heartily thanked the operators for their part and "El Presidente Estrada Cabrera" for recalling me. Due to consequent delays, negotiations, and other Latin-American political obstacles, my original two month mission was stretched to almost nine months. Finally, an exchange of congratulatory messages between their excellencies, The Hon. President of the United States, Woodrow Wilson, and El Presidente Manuel Estrada Cabrera of Guatemala, completed our contract. Then, modestly hinting that he had possibly saved my life by previously recalling me, El

Presidente granted me permission to return State-side "carrying with me pleasant memories of Guatemala, and with all best wishes for a safe return home."

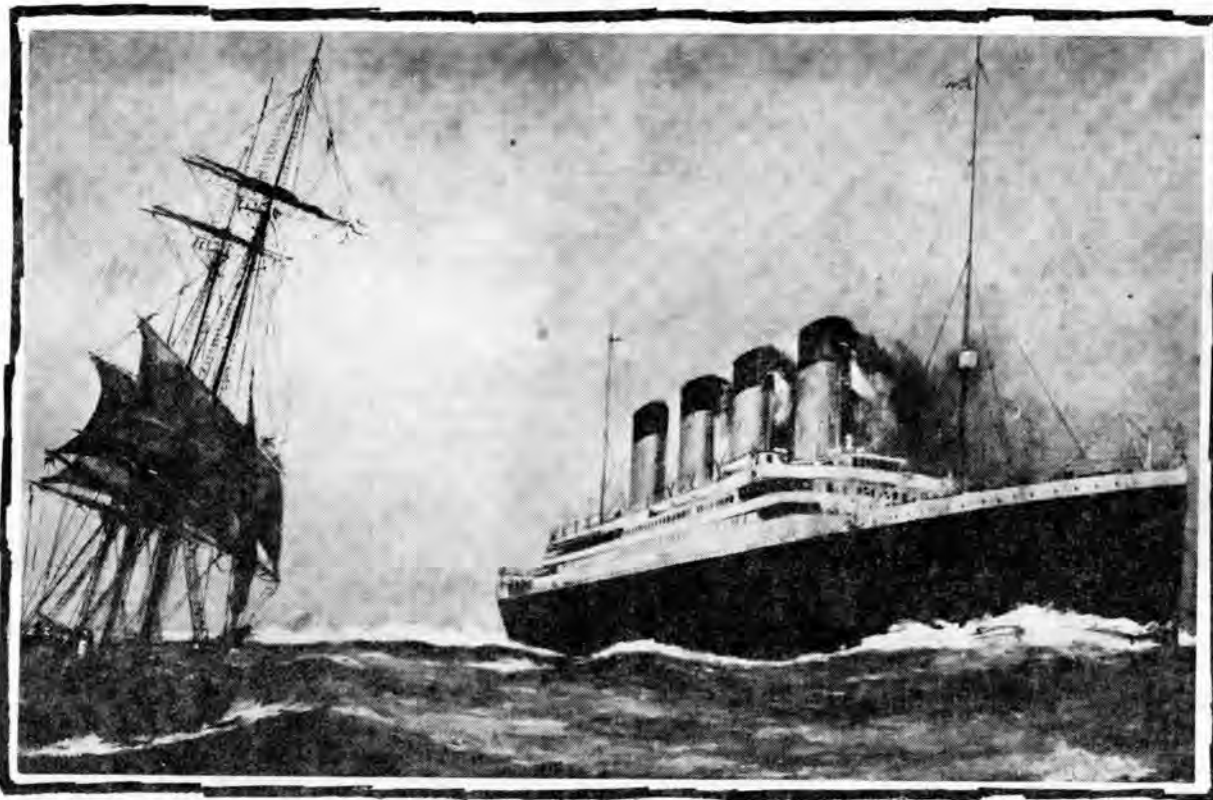
In the meanwhile, Sperry Gyro had been considering forming a class of instruction in the theory, installation, operation and maintenance of the Gyro Compass, automatic plane pilots and stabilizers, and other products available to Foreign Governments. Among those scheduled to take the course, were officers and qualified enlisted personnel of the U.S. Navy, and Naval officers from China, Greece, Japan, Argentina, Brazil, Chile, Spain and Uruguay. The Spanish and Latin-American Officers spoke very little English, consequently, instruction was necessary in their native tongue. Assuming that my nine month sojourn in Guatemala had given me a fair background in Spanish, Mr. Sperry requested my return and charged me with the conduct of the class. Thus, I found myself happily back on the Sperry payroll.

But, that was shortlived, for on Aug. 21st, 1916, a letter from Washington, D.C. arrived, offering me a position as Civil Radio Engineer with the Army Signal Corps. My reply that I was happily married to my job with Sperry Gyro and did not wish to change, was brushed aside, for, a few weeks later, came a telegram from Chief Signal Officer, Col. George O. Squier, authorizing my appointment as Radio Engineer, Signal Service at Large, and directing me to report to the New York Office by Dec. 1st, for further assignment to the Southern Department for duty. In view of the spreading conflict in Europe, Mr. Elmer Sperry counseled me to accept, though reluctant to let me go. Well, for the next four years, back in the Radio groove!

My duties and responsibilities consisted of erection, installation and maintenance of complete Radio Stations with Lowenstein 10 KW quenched gap transmitters at Fort Huachuca, Arizona; Fort McIntosh at Laredo and Camp Marfa, Texas. A 5 KW and a 30 KW Federal Poulsen Arc stations were later erected at Fort Brown, Brownsville, and Fort Bliss, El Paso, Texas, respectively. Mobile 2 KW units on two ton White trucks, were established at Fort Ringgold, Eagle Pass and Presidio, Texas; and in Douglas and Nogales, Arizona.

By Oct. 25, 1917, a newly developed General Electric experimental "Pliotron" type transmitter was received at Fort Sam Houston, "WUJ", the Southern Department Headquarters station at San Antonio, Texas. Upon arrival of General Electric Engineer, John H. Payne, the transmitter was installed for test. The original installation was to consist of 15 Pliotrons controlled by a master oscillator. A 2,000 volt D. C. generator supplied the plate voltages and a 350 volt bank of type 6 dry cells provided "C" battery grid control. However, only five tubes in multiple could be made to function satisfactorily without interaction. Despite an indicated antenna radiation of only 13 R F amps, compared with 25 amps obtained from the station's Telefunken quenched gap transmitter at 8 KW, the sharply attuned "CW" signal was received at all stations with considerably greater intensity and readability.

At the height of the war, it was believed that the hi-powered Telefunken type transmitter in Mexico City was conveying secret data to "POZ" Nauen, Germany, coded within its news items. The sending speed, evidently mechanical, was too fast for our best operators along the Mexican border. Borrowing the office "Ediphone" from the Department Signal Officer, Col. Carr, and requisitioning a De



Artist: William M. Birchall
Owner: THE MARINERS MUSEUM
Newport News, Virginia

"SS TITANIC"

- from the collection of David L. Brown

Haviland plane's Western Electric receiver from the Air Squadron, I attached the head phones to the input unit of the Ediphone and copied that night's news on several Edison wax cylinders. The plane receivers were designed with one stage of amplification, using the VT 1 triode tubes. By slowing the machine on replay, it was a simple matter to transcribe the broadcast, as the signals were readable even through the usual border static. Col. Carr rushed the cylinders to Washington and was immediately directed to copy each nightly broadcast and rush the cylinders to Central Intelligence. We must have hit the "Jack Pot."

One other Border incident stands out in my memory. Chubby Pvt. Bedros Danelien, a very apt telegrapher, was one of the crew stationed at Fort McIntosh. On completion of the Radio Station, young Post officers would visit, with their attractive consorts, to this new place of interest. On such occasions, I would entertain them with some "Hi-frequency" demonstrations. By isolating electrically, but not inductively, one pancake coil from the Antenna loading stack, it was possible to draw off sparks up to six inches long with an all metal screwdriver held in my hand. Bedros had often observed this performance and heard me remark that it was merely a harmless hi-frequency capacity charge. Being quite timid, he had not asked me about the technical side of the act.

One afternoon, on returning to the station from town, I was told that Bedros was in the hospital. Rushing over there, this was his story: "You know Mr. Danko, I often watched you doing that 'spark trick'. So, I brought my girl friend from town and wanted to impress her. Not wishing to bother the operator on duty, I got a piece of No. 8 power line wire and led her to where the antenna bushing connects to the down lead and when Fred was sending, I reached up with the wire to pull off a spark. Something hit me and I woke up in the hospital."

Fortunately, outside of the sudden shock which his sturdy frame took quite well, he experienced no severe injury. The only evidence of his attempt to impress his lady friend were a sheepish embarrassment and some white burned flesh specks on his left hand where the hot spark punctured through the wire insulation, and in the soles of his feet, where nails in his Army shoes conducted the charge to the ground. I then explained to him that wherever a spark hits, there is heat. That, in my experiment, the metal of the screwdriver was in direct contact with my flesh, therefore no arc, and my feet were on an insulating hard wood floor. Therefore, the spark from the coil was merely a low power, very high-frequency capacity charge on the surface of my body and harmless. Bedros, thereafter, was a more cautious and wiser man!

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REVIEW: WIRELESS AGE, DEC. 1914

The year is drawing to a close. This issue is the last one to carry the 1914 date line; it is therefore fitting to review one branch of activity of the twelve months past, even though their full term has not quite expired.

For the year has been a notable one in demonstrating the humanitarian values of wireless. A number of thrilling instances hold our attention. Taking them in chronological order, the wreck of the oil tanker Oklahoma, which broke in two about seventy-five miles south of Sandy Hook on January 4, effectively pointed out the necessity for wireless protection on cargo vessels. Twenty-seven of her crew of forty were lost in the small boats launched in a raging gale; thirteen were finally saved through the wireless appeal for aid sent out by a Spanish steamship which sighted the sinking vessel, but found itself helpless without further assistance.

In striking contrast was the timely rescue effected when the Vanderbilt yacht Warrior ran ashore on the coast of Colombia on January 26. The wireless call was answered by the United Fruit steamship Frutera. Eight of that vessel's lifeboats when launched were crushed like eggshells or overturned in the sea in a vain attempt to reach the yacht. Then the Almirante was summoned by wireless from forty miles away, and finally succeeded in taking off all the Warrior's passengers. Aboard the yacht were Mr. and Mrs. Frederick W. Vanderbilt, the Duke and Duchess of Manchester and Lord Arthur George Keith-Falconer.

Thirteen days previous to this, on January 13, the Royal Mail steamship Cobequid lost her bearings in a blinding blizzard and stranded on Trinity Rock, in the Bay of Fundy. Every one of the 108 persons aboard were saved by the two vessels answering her wireless appeals for succor. Since wireless telegraphy first triumphed over the forces of nature no more remarkable rescue has been effected. Every other manner of signaling device, by sound or sight, was useless in this case. Sirens could not have been heard, nor "flare-ups" seen through the heavy blanket of fog that lay close to the water.

On the morning of January 30 came the great horror of the Monroe disaster with the news of the heroic self-sacrifice made by wireless operator Ferdinand Kuehn when the Old Dominion liner slipped beneath the oily waters twelve minutes after coming into collision with the fog-bound Nantucket.

And on March 17, when the seas were pounding the City of Sydney to pieces on the Sambo Rocks, near Halifax, N. S., her SOS brought the tug Rosemary to the rescue. Fifty-three persons were taken safely from the ships and not a life lost.

Destroyed by flames in mid-ocean was the fate of the freighter Columbian on May 3. The crew had taken refuge in the small boats and become separated. One lifeboat was sighted by the Cunarder Franconia and the survivors were taken on board; immediately afterward a wireless appeal to watch for the others was sent broadcast. Thirty-four hours later the steamer Manhattan reported success in locating a boat containing fourteen men. The revenue cutter Seneca found the third boat holding four survivors some days later. In all, thirty-one lives were saved by wireless directing a search in lonely waters.

A thousand souls suddenly ushered into eternity was the news that shocked the world on the morning of May 29. A heavy collier, the Storstad, crashed amidship into the passenger-laden Empress of Ireland and swept aft, opening up her whole side to the hungry waters. Seventeen minutes later the great vessel was at the bottom of the St. Lawrence. Wireless was directly responsible for the saving of 452 lives in bringing to the spot two rescue steamers twenty minutes after the disaster. This worthy achievement was recognized by the survivors by cheers for Marconi.



The COMMERCIAL BRASSPOUNDER

A Department
for the Operator
at Sea and Ashore



RADIO FOR FEBRUARY, 1929



THE TITANIC DISASTER

As Dug Out of the Old Congressional Records
By WM. A. BRENNAN, KOZC

The world has recently been stirred to the depth by a maritime disaster which almost parallels that related below. It is possible that the *Vestris* tragedy will result in a more liberal use of radio in time of peril. Perhaps the officers may be held accountable to the government at such a time rather than to a nickel-worshipping steamship company.

CQD CQD SOS SOS DE MGY TITANIC SINKING, PLEASE RUSH ALL POSSIBLE ASSISTANCE, RUSH, RUSH" were the few terse, electrifying words clicked out by the wireless operators of the gigantic White Star liner *Titanic* on the night of April 14, 1912. The startled world was thus given its first inkling of the terrible disaster that befell the doomed liner, and wireless, or radio, was skyrocketed to the attention of the world as a utility and safeguard of the utmost importance.

The *Titanic* was equipped with a 5-k.w. disk discharger, magnetic detector, valve receiver and emergency gear. It was the only vessel afloat that had one of the new disk discharger installations and it boasted a range of about 500 miles at daylight. At the key of the splendid liner were Jack Phillips, chief operator, and Harold S. Bride, 22, second operator. Both were in the employ of the British Marconi Company and were being paid a monthly salary of six and four pounds Sterling, respectively, (about \$28.00 and \$20.00 in American money), all for being entrusted with the safety of nearly 2500 souls in case of emergency.

On the morning of that fateful Sunday, trouble had been experienced with the insulation on the main panel of the transmitter and Mr. Phillips has arisen considerably earlier than usual to help repair the trouble. This finished, he started his 4 p. m. to 2 a. m. watch, with Mr. Bride's promise to relieve him at midnight, as the former was not feeling very well. At 5 p. m. the *SS. Californian* called the *Titanic*, MGY, and the *Baltic*,

MBC, with information regarding ice, stating that that ship had just passed three large bergs and a large number of growlers or smaller bergs. The *Baltic* acknowledged the call with the signal "RD," used at that time to QSL a message. The *Titanic* heard the report and copied it, but did not acknowledge immediately, as Mr. Phillips was working on his abstracts and had them all about him on his desk. After about twenty minutes, however, he gave the *Californian* the "RD" signal, whereupon the latter sent "TIS," or the finishing signal used at that time. Mr. Phillips took the information regarding the

position of the icebergs to the bridge at about 5:30 p. m., ship's time, and the officer on watch figured they would be in the vicinity of the bergs about 11 p. m. that evening.

From 6 p. m. to 10 p. m. Phillips exchanged several regular messages with nearby ships and at 10 p. m. he listened in to press reports from the Cape Cod station, which called the *Titanic* at 11 p. m. with a large number of messages, which kept the two stations in communication up to the time of the collision. As closely as could be ascertained, this happened at 11:50 p. m., Sunday, New York time. There was just a slight grating and a little lurch of the vessel to port. The blow was so slight that it did not even serve to awaken passengers who had retired, although most of the ship's crew who were not on watch were awakened by the unusual lurch of the vessel and came on deck to investigate. No one thought, however, that anything serious had occurred.

Mr. Bride had planned to go on watch at midnight, so arose about 20 minutes before. The operators' sleeping quarters adjoined the operating room and before dressing, Bride stepped into this room, asked Phillips how he was making out and was told that there were still a number of messages for Cape Cod. Mr. Bride then dressed and put on the phones.

It was at this instant that the boat struck, but with such a slight shock that Phillips continued his preparations for retiring. Not long after that the captain came into the operating room and told Bride that he had better get assistance. Phillips, hearing him, came out into the operating room and asked the captain if he wanted him to use the distress call. The captain said he did, so Phillips took over the key and sent the "CQD" signal about half a dozen times, signing "MGY," the call letters of the *Titanic*.

The *SS. Frankfurt*, DFT, was the first vessel to answer the call. Phillips advised Bride that the *Frankfurt* had answered and asked him to take the information to the bridge. Captain Smith then asked for the *Frankfurt's* position. The *Carpathia* answered the call, giving her position, and said she was already coming to their assistance. Phillips then raised the *Olympic*, but while he was working him the captain came in and interrupted. Phillips advised the captain that the *Frankfurt* did not acknowledge his position, merely telling him he would see him in a few minutes.

After a lapse of about 20 minutes, during which time the *Titanic's* operator was working the *Carpathia* and *Olympic*, the *Frankfurt's* operator called again and asked what the matter was. Whether it was under the stress of strain or from being jammed, Phillips told him: "You are a fool, keep out!" and gave him the "DDD" signal, which means "QRT" in our present list of abbreviations.

The question has since been raised as to whether Phillips used good judgment in sending this, whereas, if he had sent his position and the *Frankfurt* had been close at hand it might have been possible to have saved all the lives of those on the ship. Phillips evidently thought that the *Frankfurt's* operator had received his first position report and was annoyed when he called him the second time and found that he had not. With the knowledge that the *Olympic* and *Carpathia* were steaming toward them at forced draft he perhaps felt that further talk with the *Frankfurt* would have been wasted effort, and it later turned out that he was right.

Mr. Bride then took the phones and raised the *Baltic*, while Phillips went out on deck to look around and ascertain just how badly the ship had been damaged. Bride told Phillips, when the latter returned, that the *Baltic's* signals were so weak that he did not think it worth trying further, so Phillips again took the phones while Bride went into the stateroom and proceeded to get their money together. When he came back to the operating room he saw a fireman or coalpasser trying to relieve Phillips of his lifebelt. The two of them forced him out of the cabin just as the captain came in and told them to look out for themselves, as the vessel was pretty badly damaged and would only stay afloat a few minutes longer.

They went on deck together and approached a collapsible boat which several members of the crew were trying to launch on the port side. Mr. Phillips left them, starting aft again, as he wanted to say that the engine room was being flooded, the dynamos were going out, and have a last word with the *Carpathia*. That was the last time Phillips was seen. The collapsible boat capsized as soon as it hit the water, pinning Bride and several others under it in the icy waters, where they were held for about 40 minutes before another boat finally rescued them.

Mention might be made of the fact that only four ships carried two operators at that time, the *Titanic*, *Olympic*, *Mauretania* and *Lusitania*; all the others carrying one operator each, and requiring only that watch necessary for him to handle the traffic of his vessel. It was by the merest luck that Operator Cottam of the *SS. Carpathia*, the vessel that picked up the survivors, heard the *Titanic's* call for assistance.

At 10 p. m. Cottam was receiving press from Cape Cod. The latter station finished with press at 11 p. m. and started with the *Titanic* on a long string of messages. He then took the press items that he had just copied to the bridge and spent some time there. Returning to his operating room he decided to get confirmation on a message he had sent to the coast via the *SS. Parisian* earlier in the day, providing that operator



The 'Borden Arctic Expedition'

Cruise of the Schooner 'Northern Light'

as told by

Ralph W. Hart Jr.



470-P

The "Northern Light" was built at Stone's Shipyard on the Oakland Estuary in the spring of 1927. She was a two masted schooner with a couple of feeble diesel auxiliaries, about 150 ft. in length and she carried a crew of 17 to serve a cabin complement of 7. A Mr. John Borden, by now I would guess long dead, who had more than an equal share of this world's goods had the vessel especially built for this cruise.

In the spring of 1927 I was ending my Soph year at UC and living in Oakland. One evening the Oakland Tribune carried a story about the launching of the "Northern Light" and when I read the yarn I decided that I just had to go along. Since Mr. Borden was then in Oakland, having come out from his home in Chicago to attend the launching, I wrote to him at Stone's shipyard and asked for an interview, which was granted. The upshot was that I sold him a bill of goods on my abilities as an electrician to the point that he agreed to take me provided RCA, who were furnishing the radio gear, would accept me. At that time RJ was running the show (from I think it was on Fremont St.) and he assigned me to the ship.

We sailed around the first of May and were gone until early September and just about everything that could happen did happen. Twice we were afire, we went to the aid of the old Liebes fur trader (I think it was the Charles Brower) when she went aground in a heavy fog on the south coast of St. Lawrence Island in the Bering Sea, we visited the seal rookeries on St. Paul Island and swam in the warm waters of an old volcano that sticks its head up in the Bering just high enough for the sea to wash in and out of the crater. The owner and his guests hunted Kodiak bear, and got several, walrus, polar bear and Arctic birds. The specimens were carefully skinned and preserved and sent to the Field Museum in Chicago. As a matter of fact the trip was known as the "Borden Arctic Expedition." Years later, along about 1945 I was in Chicago and looked around the Field. As I recall it there was one exhibit credited to the Borden trip.

Being the ship's electrician was some job. All of the toilets were below the water line and each had its own electric motor driven flushing pump. I spent many an hour with my head practically in the toilet bowl while I renewed motor brushes. In addition to these I had a whole flock of motor driven service pumps, two fair sized generators that were driven off the forward end of each of the main engines and a small diesel driven auxiliary generator to ride herd on. We also had a good sized 120 volt bank of Edison cells so we could have lights when we were at anchor. I caught h--l from the Chief Engineer one morning for running this bank down the evening before. I had a 40 meter rig of my own aboard and had sat up most of the night chewing the fat with other Hams.

Being Second Assistant Engineer was one whole lot of work. The owner had his chauffeur along as First Assistant and Launch Operator and he knew even less about diesel engines than I did. Fortunately we had a really sharp Chief. Most of our engine woes stemmed from the fact that the engines were not properly installed. These were what were called "crank-case pressure scavenging" engines and they should have had short straight exhausts but to do that would have meant putting on a stack and the owner would have none of that. This was a sailing vessel and by damn it was going to look like one. So the engines had to exhaust via side ports and to reach these ports the exhaust lines followed a really devious path. The vessel was so heavy, being sheathed with lignum vitae and braced to survive a winter in the ice if she should get caught, that she made only about 6 knots on the engines at best. When there was a usable breeze we went along with both engines and sail. With us heeled over so that the lee exhaust port spent most of its time under water, and with wind pressures on the windward exhaust port those poor engines just manufactured soot and fouled up themselves and the whole system. Twice during the trip we tore down the engines and installed new piston rings. It got so bad that, on watch, we would keep an eagle eye on the exhaust temperatures and when they got up to a certain point we would cut the revs. Maybe you think the Mates didn't scream their heads off when they read the log and saw how few miles we had made in the last hour. We kind of had a running battle with the mates anyhow.

KGEG QRD ARCTIC—HART

Since I had the wireless work and the electrical work to do I drew only a 4 hour watch in the engine room. The Chief and the First split the other 20. We had been far enough North that we had not lost sight of the sun for a couple of weeks, then we headed South. It was sure a relief to see it get dark again. I had the midnight to 4 AM watch and was probably more asleep than I was awake when, with no warning whatsoever, I got a "Full astern" bell on both engines. Believe me I jumped. I got both engines stopped and the port engine going astern when the telegraph rang to "Stop." I never did get the starboard mill in reverse. That stupid squarehead mate had like to piled us up on one of the Diomed Islands. I enquired very gently as to whether he had ever heard of a "Stand-By" bell when running in fog. I forget what he said.

The Bering Sea is riddled with "dead" spots. Trying to work KPH on 720 meters was pretty chancy. Maybe you would get through and maybe not. The operator on the Liebes vessel (was it the Charles Brower?) was a guy named Johnson. He and I had an early evening sked when we exchanged traffic thus doubling our chances of clearing the hook. One evening after supper I crawled into the shack and turned on the receiver just in time to hear him say he was aground. His signal was so strong that I knew he was close by. It was real foggy and had been foggy for quite a while. He gave me his position on the southern shore of St. Lawrence Island. I took it up to the Chart House and Capt. Borden (the owner was also the skipper) plotted it. We were then heading north skirting the west end of St. Lawrence Island so we turned around to head south first and then later after we were clear of the Island to head east toward him. We had a radio compass aboard and I tried to get a bearing but got nothing that even remotely resembled the right direction. A look at the chart showed the south westerly tip of the island between us and I told the Skipper that we would have to wait until we were further south as I thought the land was distorting the bearing. Meanwhile one of the Coast Guard cutters came into the act. He was around 200 miles south of us at St. George Island and he too was taking radio compass bearings. Pretty soon I got a good line and gave it to the Skipper. He pushed it away, no good, the Brower is a good 15 miles east of where I showed him according to his stated position. So I got the cutter to give me his position and his bearing and when we plotted these it checked my bearing. Finally I persuaded the Skipper to go along with the radio bearings by suggesting to him that if the Brower's Skipper was so sure of his position he wouldn't be on the beach.

We went ahead on a dead slow bell taking soundings. After an hour or so, during which Johnson said that pieces of the keel were floating around, a big swell lifted her clear and dropped her on the seaward side of the reef. She was afloat and had some power and enough of the rudder left to give some steerage. We lay-to and gave her a course to steer and pretty soon she loomed up out of the fog. There was nothing we could do for her. Apparently she was not hurt too badly as she went on to Nome and then a week or so later on to Point Barrow and eventually back to San Francisco before dry docking. She came down from the Bering Straits only a few weeks before we did. Had she had the North Pacific weather that we had she might not have made it home. I met Johnson later, in fact worked with him for a while and his story was that she was pretty well banged up.

On the way north we had gone via Victoria, then up the Inside Passage with stops at Ketchikan and Juneau, then across the Gulf of Alaska to a small bay on the southern side of the Aleutian Peninsula. Here we lay at anchor for a month while the owner and his guests hunted Kodiak bear. We put in our time working over the engines. The Limey steward had washed a lot of sheets and couldn't get them to dry because of the fog and overcast so he had built up a big fire in the main cabin heater and strung clothes lines below decks. This was the first time that the coal fired heater had been operated. Its stack ran through the bulkhead into the engine room, then terminated just above the sky-light. Remember, this was a wooden vessel. When the pipe was run through the bulkhead the hole was too small and the insulation was inadequate . . . so we had us a fire. It was early evening, still light and we were all sitting around on deck swapping lies. One of the guys went below to get some tobacco and he saw the engine room full of smoke. At his alarm all hands responded and just about every man picked up a fire extinguisher and each guy who had an extinguisher felt duty bound to use it. You should have seen our engine room! Bracketed onto the bulkhead just below where the fire was there were several motor driven pumps and when the furor had died down I realized that all of these motors had been treated to a bath that was strong in sulphuric acid and maybe I had better do something about it. These were all small motors, none bigger than half a horse, so I got some help to take them apart, wash them in warm water to get ride of the acid and then we baked them overnight in the galley stove. Maybe it was not the right way to do it but they all worked later. There was nothing we could do about proper insulation but we did enlarge the hole a bit and told the steward to go easy on his fires. He didn't and several days later we almost did a repeat of the first act but it was caught in time. Oh yes, in addition to the motors below the fire there was a good sized conduit that ran along the bulkhead just above where the fire was. All of the wiring for the entire after end of the vessel ran in this conduit. The heat had melted the insulation and several of the circuits had picked up grounds. We could not pull the wires out because of the melted insulation so we cut it adrift at each end and tossed the length of conduit over the side. We had enough wire in our stores but I do remember that it was something of a puzzle to get the circuits unscrambled. Well I had hired out as an electrician, hadn't I.

Before I knock off let me tell you about the crew we had. It was a dilly. On deck we had 8 boys ranging in age from 17 to 21. These were split into 2 watches. These 8 were Sea Scouts from Chicago and they had been picked from a large number of candidates. They were as fine a bunch of boys as you could want to know. All of them had had a lot of sailing on Lake Michigan and there was no lack of savvy. To run the watches there were two square-head mates who had had much more experience in sail than they had in steam. As I mentioned, the owner was the Captain. He had a USNR commission and had skippered lots of yachts. To act as his Exec and to advise him on Arctic Ocean sailing, and we did go into the floe ice and break a way for ourselves a good part of the time up there, he had a retired Whaler Captain who had spend many seasons in the Arctic. I have already mentioned the engine room crew but our Stewards Dept. takes the cake. We started out from San Francisco with a man and wife team, he to be the cook and she to wait on the cabin. At Victoria the Skipper fired them both and hired an out-of-work French Hotel Chef to do the cooking and a Limey steward to wait on the cabin. Frenchy was a real good cook but the work was a bit too much so when we pulled in at Ketchikan we picked up a second cook. This character was a Norwegian and he

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LADY 'SPARKS,' VET OF SHIP RADIO SERVICE, TO JOIN SPARS

With a background of unusual achievement as the only woman radio operator in the history of American Merchant Marine annals to serve aboard a tanker, Miss Anne Lucille Smalley, 22, of Harwich port, Cape Cod, will leave tomorrow as a Spar for basic training at Smith College.

Petite and vivacious, with an ancestral heritage of the sea, Miss Smalley will take up Uncle Sam's endeavor, hopeful that some day she will be able to tick out Morse code in a Coast Guard station along the New England coast.

Quick of speech and alert of mind, the young woman told a story of personal accomplishment as a flier and tanker radio operator that would do justice to the pen of Jack London.

WRECK CODE TICKING
 Vividly she recalled how, tied with rope to her chair in the wireless room, she kept the code ticking away fast as the tanker pushed through angry waters off Cape

Hatteras in its run of eastern seaboard ports of call a few years ago when for five months she was the only woman aboard.

"And, if I had the opportunity, I'd do it all over again," she quickly added. "The men were all gentlemen and treated me with the most respect, unmindful that I was a woman. At first, they were stunned by my appearance on deck. They were superstitious about it. But after a while, they accepted me as a member of the crew."

It wasn't a stunt that Miss Smalley took the job. It was because she was an apt student of code, qualified for the post and got it on merit. She had studied at the Massachusetts Radio and Telegraph school and matriculated with flying colors.

GRANDDAD LOST LIFE
 Daughter of Mrs. Annie T. Smalley of Harwich Port, her grandfather, Valentine Doane Nickerson, later, Valentine Doane Nickerson, years back served as a surfman at the Cape Cod Coast Guard Station when Twin Lights were in existence. And, in 1902 he lost his life in the Maudsloy disaster off Chatham.

"I realized that with radio especially a woman, her grandfather and telegraph training could be of the greatest use in this war," the young woman said. "And I finally decided to give up my job as an assistant specialty shop manager to enlist in the Spars."



ANNE L. SMALLEY
 Girl Radio Vet in SPARS

By

Anne L. Smalley Commander.USCGR



recent news article - "First Woman Accepted at Marine Academy" - caught, and holds my attention. For I went to sea some years back on an American merchant marine vessel, the 486-foot tanker, SS TOLEDO.

I did not hold a third mate's rating as this young woman will when her training is completed, but I had just completed an arduous radio engineering course, passed the required federal government examinations and held a second-class radiotelegraphy license with special endorsement for first-class radiotelephone.

My goal was to work in aviation communications, as an airport radio control tower operator, an air traffic controller at one of the Federal Aviation Authority airport control centers, or, with any luck, an airborne communications officer, hopefully, with one of the overseas airlines. Nothing, absolutely nothing, was further from my thoughts and plans than going to sea--on anything!

So how did this sea interlude come about? On an oil tanker? With 57 men? It's very simple, really. On all of the communication employment agency application forms, I signed my name using only the first two initials "A.L." and my surname. This, I did with intent, deliberately, because, as some may recall, it was not until the early 1970's that a woman knew she had any rights, let alone anything approaching equal.



"SEA INTERLUDE"

THE ADVENTURES OF A LADY "SPARKS"

WHO WENT TO SEA ON AN OIL TANKER

NORTHERN LIGHT ODYSSEY—HART

had been cooking on halibut boats. Even so, our three-nation, three-man Stewards Dept. got along well. Out of Nome we added two Eskimos and two kayaks for them to paddle. Their job was to retrieve birds from the water and to skin the polar bear and walrus so the specimens could be shipped home.

The guest list was two couples and a single gal in addition to the owner and his wife. They began to get on one another's nerves before we had been many weeks at sea. The boss was a yachting enthusiast and he kept busy doing the navigation and generally running the show but there was too little for the rest of them to do. Usually along about 10 each evening I would copy news from NPL and take it down into the cabin. The seven of them would all be there either reading or playing solitaire and hardly speaking a word. The men were interested in the stock market and most of the traffic I handled had to do with buying and selling. One evening I got them some quotations and they got their heads together and decided to unload. As luck would have it I didn't get through and couldn't clear my hook. Next morning they were somewhat less than pleased but that day the market rose a bit so they were happy enough to let their sell orders go in a day later.

After we got home to San Francisco the Northern Light was laid up for some years; then later the Skipper sold her to his sister and she was refitted for a cruise to the South Seas and to Australia. Somebody once told me that she wound up as a service boat for the pilots outside Boston but I am not sure. I remember that her original cost was around a quarter of a million and those 1927 dollars were the old fashioned big round juicy ones.

FOOTNOTE BY 'YE ED'

An interesting sidelight to Ralph Hart's story to Ye Ed, Bill Brennan is that he helped to remove the equipment leased by RMCA to Borden and installed on the Schooner Northern Light (we called it a Yacht). The late Norris C. Kumlter (Member 380-SGP) who passed on April 2 1972 and Ye Ed were working as 'MRI' in the RMCA shop at the time the Northern Light returned and Dick Johnstone sent us to a pier on the north Embarcadéra to remove the equipment. Shortly thereafter, Ye Ed was assigned to the S.S. WEST HENSHAW - KEBQ on the New Zealand/Australia run for about 16 months.

SMALLEY-SEA INTERLUDE

The irony of my sex-hidden signature, however, was compounded by the fact that in filing those applications, I listed as an acceptable second-choice assignment that of a communications operator at either a shore station traffic-relay center or land-based communications control center.

The application I mailed to Mackay Radio at 100 State St., Boston, Mass., resulted in a telegram: HAVE COMMUNICATION POSITION FOR YOU X ADVISE DECISION PRIOR TO 1600 THIS DATE X J WALKER.

I still remember the stunned, bewildered expression which erupted on the faces of that agency's office manager, Johnny Walker, and that of Captain Moller's when the full impact of my acceptance, sign unseen, really got through to them. Too, it took a while for the TOLEDO'S crew to return my daily greeting in a voice within the normal adult male range or walk passed me without tripping over their feet, or mine.

The TOLEDO was owned by the Cities Service Oil Company of 60 Wall Street, New York and commanded by one of Brooklyn's finest: Ulrik V. Moller. Our first mate, William Mueller, was of German descent. Charles Edward Slater, a full-blooded, full-bodied Englishman who held a captain's rating and had sailed as master of fourteen different ships under the flags of seven countries, was the TOLEDO'S second mate. Our third mate was Sigard Olaf Sampson, S.O.S. Hellum, or Siggy, as he was called.

I came to know Captain Moller and the mates better than the rest of the officers and crew. For their cabins and work, as well as mine, were confined to the ship's forward superstructure section. There, we saw, worked with and came to know one another on a daily basis over a period of several months.

Our ship also included its quota of engineers, oilmen, deckhands and cooks. Then, there was a man called "Pumps" who tended the TOLEDO'S loading and unloading; a ship's carpenter, "Chips," and a radio operator normally dubbed "Sparks," but in my case, "Sparklet." These men however, lived and for the most part worked, on the vessel's aft superstructure section, a place where except for meals, I considered strictly "off limits" for me.

The TOLEDO had two dining rooms, or galley as they are called aboard ships. One for the ship's officers including the engineers, and one for the crew on the deck below. So although I ate with the engineers, I rarely saw them except during meal times.

As for "Pumps" and "Chips," I saw them often working about the ship. "Pumps" was an abnormally shy individual who worked along the main deck opening and closing the tanker's multi-colored wheel controls for the input and output of our cargo. I don't ever recall seeing this man on the ship's forward compartment not hearing him speak an intelligible word.

He was a strange man in looks and manner. He was always disheveled in dress, his hair wild and bushy, his face largely concealed beneath his heavy black, bristling beard. He chewed tobacco incessantly so it seemed, and much too obvious. It funneled down along both sides of his mouth, onto his ill-kept beard and oil-covered shirtfront. His eyes were close-set, small and furtive; they never failed to sense my approach. I used to steel myself whenever meeting him was unavoidable.

In preparation, he would eject a mouthful of the brown, viscous-like fluid, swipe his arm across his mouth and, turning to leer sideways at me, would start nodding. When I bade him a good morning or afternoon, his jaw would snap open with the suddenness of a trap and he would emit the weirdest, maddening laughter I have ever heard outside that of a dramatic rendition. Quite truthfully, he frightened me. So where "Pumps" was concerned, there was never any conversation, opportunity or desire of wanting to know him.

Conversation with "Chips" too, was out of the question. For the poor man had but a stub of a tongue and could only grunt. "Uh," was his single monosyllabic utterance which, with varying body gestures, comprised his vocabulary and he had never learned to write.

Later, when I came to know Mr. Slater and Siggy, I was told that "Chips," during one of his voyages to the Orient, made the unforgiveable, regrettable mistake of not first finding out if one of the young Chinese women he enfolded in his manly embrace was or was not married.

The TOLEDO'S principle cargo was, of course, crude oil. When "loaded to the gummels" as Siggy would say, our tanks held 90,000 barrels. Occasionally, when we received orders to take on a load of raw sugarcane, our tanks would be washed before we came into harbor and when loaded, we would head seaward, our destination a refinery north of the Mason-Dixon Line.

At northern terminals our cargo was pumped out through a large flexible "umbilical" tubing which interconnected with and flowed through dockside pumping equipment and on into huge storage tanks along Boston, New York and Philadelphia waterfronts.

Our southern ports-of-call were Aransas Pass, Corpus Christi and Houston in Texas. Every now and again the TOLEDO would drop anchor in Lake Charles, Louisiana, Cuba in Caribbean waters and Venezuela on the northern coast of South America.

In both our routine northern and southern ports, our average shore leave was from 12 to 24 hours with a rare 48 hour stay when dockside equipment, or ours, faltered or failed to operate efficiently.

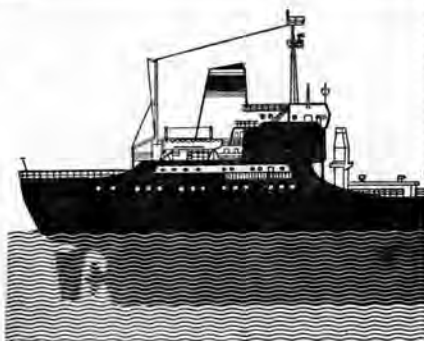
After a voyage or two I learned that tankers are like taxis, underway about 95% of their life tenure, or so it seemed to this confirmed landlubber suddenly turned sailor. With such constant shuttling it didn't take long for the monotony, the utter boredom of almost unending shipboard confinement to seep through.

Our voyages varied from 11, 15, 17 to 21 days at sea at a stretch. When it seemed to me that the TOLEDO just never would see land again, a narrow bluish haze or an arched glow of light against a black sky, would appear along the horizon and once more, I would be reassured we were not forever lost within that vast empty world of water and sky.

As we approached harbor, a scheduled tug, bearing our harbor pilot would appear off our portside. The TOLEDO'S engines would trim to slow, then idle. The tug would come alongside. The pilot would grab onto the overhanging rope-ladder. The tug would pull away and head for shore. The pilot, with his knowledge and skill of the in-land waterways would bring our big ship into port where the tugs we had requested would nuzzle close in against the TOLEDO'S deep hull, easing it in, carefully until it glided gently alongside its assigned pier.



'TANKER- TALES' SMALLEY



Deckhands would scurry about the deck in a flurry of activities. A section of the portside railing would be removed. Several of the crew would release the well-tied gangplank, shove it across the main deck and position it securely at the railing's opening. Those of us who could go ashore in that port, including the TOLEDO'S radio officer, would line up, eager to get into town.

We shared taxis so that we could get into town faster, but once there, they went their way and I mine. I know not how they spent their shore leave, but as for me, my first ambition was to enjoy a superb meal with lots of milk and fruit, and then to buy more to take back aboard ship. Next, I'd get magazines, a book or two, see a movie, sit in a park, or just walk and walk for the sheer sensation of seeing people, trees, flowers, buildings, automobiles and feeling the good, solid earth beneath my feet.

But time, whether at sea or wherever, has a way of dissolving, faster when we're happy and occupied, and much, much slower when we are confined in a deadly day-in-day-out routine in an isolated environment and alone. For I would scarcely get my sealegs to behave as if they both truly were the same length on land when it would be time to head back to the TOLEDO, and, within an hour or two, we would be outbound, toward the open sea, for another 10 days to 3 weeks voyage.

As the ship's sole radio operator my hours were intermittently long, but of no great continuous, uninterrupted duration. This kind of an operation requires many short periods of watch-standing over a longer period of hours during a day.

Our out-going transmissions were not large in number. A daily noon position report to our New York office, arrival and departure messages, arrangements for harbor pilots, tugs and berthing accommodations. In-coming messages, with the exception of orders from our New York office, were mostly replies to our ship's out-going transmissions.

As with aircraft communications, ships route and receive their messages via radio through on-shore control centers called shore stations. These use landlines such as telephone and teletype to send their messages inland. Messages, originating on land, our New York office, for example, are wired into these shore stations which in turn broadcast "traffic lists" to the ships at sea. Their lists are transmitted at known, scheduled periods and, depending upon the position of your ship, the radio officer monitors the shore station nearest the ship.

Ship radio call signs are federally assigned. They consist of four letters. The first designates the flag and registry under which a ship operates. The first letters assigned to American vessels are "W," "D" and "K." The TOLEDO'S call sign was "WOCS."

So I was indeed momentarily taken back the first time I entered the radio control center and saw

that the first letter of the TOLEDO'S call sign was "S". I wondered whether I was in fact on a Spanish vessel, the ship's vibrations had played havoc, or our previous radioman had a distorted sense of humor for the call sign read "SCOW."

Life at sea consists mainly of specified hours of work, food, sleep and relaxation. My watch-standing hours, like the mates, engineers, oilers, deckhands and so on, were specified. Food, and sleep--when the elements of sea and sky were moderate to gentle--were no problem.

But relaxing with my shipmates as the men did among themselves, posed a real problem. In this respect my life out there differed greatly from theirs. With the exception of meal times, I was alone 24 hours of the day, every day, for days following day; sometimes for 2 to 3 weeks at a time.

Off-duty time for them meant a game of cards, the shaking of dice, talk of politics, religion, the topics of the day. They were free to socialize, limited only by the length and breadth of the ship. They visited in the cabins of their shipmates, played banjos, harmonicas, and sang; I often heard them clearly when the winds were gentle. They drank beer on the aft deck on a warm evening. Sometimes, when there was too much of both, one of the mates would stroll back and quiet them.

But such periods of rest, relaxation and joviality, for me, were closed. As I saw my world out there, I had 2 strikes on me. One: I was female. Wherever I walked, sat, ate or slept amid that all-male setting I sensed I was "in-focus," so to speak; and a few men in particular made me keenly aware of it. Insofar as possible I kept my anatomy covered, loosely, wearing slacks, low-heel shoes, a sweater or jacket. No lipstick, make-up, earrings or other feminine trappings with which we adorn (or is it equip?) ourselves to attract and ensnare the opposite sex. Strike two, I was one of the TOLEDO'S officers and as such I had the responsibility to act like one at all times, under all conditions, and this, insofar as possible, I was determined to do.

From the moment I knew my first communication job was on board a ship and I made up my mind to take it, my goal was twofold, that of earning their respect and, where and how I could, their friendship.

Their relationship with me and mine with them, from the night I went on board had been courteous, distantly friendly. This decorum continued until the start of the TOLEDO'S third voyage when Captain Moller and I met along the flying bridge.

Perhaps I should explain that a tanker's flying bridge is a narrow, railed catwalk positioned some 6 feet above the main deck interconnecting their forward and aft superstructures. When the weather is foul and the main deck awash, this bridge becomes the only way of transitting the ship for food and watch-standing helmsmen to maintain their round-the-clock duty handling the ship's big wheel.

I have always remembered meeting Captain Moller that evening for several reasons. It was the beginning of one of the TOLEDO'S longest voyages, 21 days, and I was dreading the prospect of being alone and lonely for the next 3 weeks' incarceration; the very thought made me feel forlorn and depressed. To add to it, it was late Fall and Winter's first white chilling fingers were touching down across the north country. The sky was spitting icy sleet-pellets as the TOLEDO threaded its way through the channel's intricate labyrinths under the skillful guidance of our harbor pilot. The winds were already occasionally reaching Wagnerian heights.

SMALLEY-"SPARKLET"

And, off in the distance, the sea was showing its on-rushing white sabred tips. Too, I had come to live with the elements of sea and sky long enough to recognize that the storm brewing along the course the TOLEDO would assume had been forecasted to be one of some intensity. Not that I needed confirmation. For I had already come to grips with the sea's most cursed malady on 2 previous occasions and learned that an unsettled, churning sensation in my midriff was a most reliable indicator.

What I didn't know and, as it turned out was far better I didn't, was that the storm would continue to build and endure for the next 5 days and 4 nights without surcease; that, beginning late that night, Captain Moller, the chief engineer, and the TOLEDO's radio officer would maintain on watch continuously for the next two days and nights with several hours into the third day.

It must be that I sensed some premonition of the struggle ahead. For as I left the galley late that afternoon and saw the harbor tug backing off and our pilot wave "bon voyage," I deeply wished that I, too, were on my way ashore.

Between the whipping winds and the ship's increasing Machivellian dance, I started forward along the flying bridge, my head down, concentrating on my footing, both hands alternately yawing and gripping along the railings. Suddenly I smacked solidly into a formidable barrier which promptly grunted back.

The impact knocked the breath out of me, driving me against the starboard railing. As I gasped for air I felt someone vigorously thumping me on the back. I looked up, and much to my embarrassment, saw that I had run into none other than the captain himself.

Through the skirling winds and intermittent boomings of spirited whitecaps slamming against the TOLEDO's empty hull, he apologized.

He had been meaning, he said, to ask if I would care to join the officers evenings when they came to his quarters to listen to the radio news. I said I would indeed and made it back to my cabin.

When my stomach seemed to have regained something of its normal equilibrium a few minutes before the scheduled Lowell Thomas news, I secured my cabin, climbed the starboard ladderway one deck, crossed portside, passed the radio "shack" and stopped in front of the captain's door. Hesitantly, I knocked.

The door opened and Captain Moller, his pet parrot "Ruffles," Mr. Slater and Siggy welcomed me in what, for me, was the start of a whole new world. A world of companionship, friendship and learning. A world which in the intervening years, in business, the military and my personal life, has served me well.

In retrospect a long, long time ago, I recognized those months on the TOLEDO gave me a rare, valuable and interesting interlude, an experience seldom granted to woman throughout history: that of sharing a man's world. Of working and living solely with and among men, strictly on their terms.

The sea is an isolated, unmitigating environment of solitude equalled only by remote mountain ranges, the Arctic. Antarctica and what few wildernesses re-

main in the world. Surroundings such as these do not provide a normal atmosphere for the kind of life most men want to live. Nor is loneliness acceptable to most men, or their families over a long span of years.

Life on the high seas, particularly on a merchant vessel, is a world fraught with innumerable, unpredictable hazards. Storm. Fire. Explosion. Shipwreck. Hardship. And, survival.

Too, the sea with its vast canopied sphere of constantly changing colors and formations is a realm of incomparable, indescribable beauty and wonder, of peace and quiet, of at-one-ment with one's own being.

That the sea was a challenge, and that I faced one, too, I recognized from the night I went on board until the morning I walked down the TOLEDO's gangplank for the last time.

Throughout the several months I was a member of that ship's complement, I made a concerted conscientious effort to live and to work among them as they had come to work and life before a woman had suddenly been thrust into their midst. This was their world. I was an invader.

I wanted no changes. No compromises. No adjustments. I neither sought nor asked for any. And, to the best of my knowledge, they gave none. They stood on their own feet. I made every effort to do the same. They did their work without asking my assistance. I strove to carry out the functions of my job in the same manner.

When an engineer had worked long and hard to win out over a storm, and came into the galley with a stubby unshaven beard, his hair uncombed, clothes soiled with the grease and oil of his work, looking and smelling as if he had slept in them as well as worked, which he undoubtedly had, I bade him the greeting of the day in a respectful tone and tended to my food.

When an off-color story was told as one of the engineer's had a way of doing on occasion when Captain Moller was not in the galley, I concentrated on eating, every now and then swallowing an unchewed, seemingly non-sinkable chunk which meandered down my gullet with all the ease of a golfball oozing through thick, heavy mud.

When galley conversations whipped to a froth and swearing reached vigorous levels from a woman's point of view, my ears reddened and wriggled about a bit until I could get my feelings under control; but insofar as possible, I tried never to show any outward sign of displeasure or shock.

There were lighter moments, too. Moments during which I learned about the TOLEDO's operations, its navigational equipments and functions.

Mr. Slater and Siggy taught me how a ship finds its way from harbor to harbor. The use of a ship's instruments. The polaris, sextant, chronometer, parallel slide rule, books and charts.

Under their supervision I learned to plot our noon-day position, compute and carry out the necessary changes in the ship's changes of course, routes and destinations.



With their guidance--and Captain Moller's permission--they trained me to steer the TOLEDO's big wheel. And I spent many a long hour both in daylight and darkness watching the ship's binnacle compass, turning the helm from port to starboard, starboard to port, back and forth, over and over again. Nothing I have done before or since, except fly a small aircraft under moonlight, has ever given me such a complete feeling of freedom and exhilaration or held me spellbound in the sense of majestic wonder and beauty as steering the TOLEDO through a pathway of golden sea lighted by the reflective brilliance of millions and millions of endless chip diamonds. There were moments out there when it was truly a beautiful world, a fairyland indeed.

Mr. Slater and Siggy taught me to recognize and understand the various interactions between the elements of wind, sky and sea. The varying clouds, their layers, movements and formations and how to foretell weather which controlled our course, our ride and our destinies. When the night sky was emblazened with myriads of yellowish planets and twinkling stars, they took the time and interest to show me the location of the North Pole . . . Orion's Belt . . . Venus . . . Jupiter . . . the Milky Way . . . Taurus, the Bull . . .

Through their eyes and their love of the sea I came to feel the miracle and magic of a sun's rising up from out of the sea, its steady, inalterable climb toward the noonday zenith; its westward drift, measurable and predictable, and its gradual decline

along the horizon and its absorption and final disappearance back into the sea from which it had emerged.

Whenever there was a bright moonlight night, the weather was warm and either Mr. Slater or Siggy had the bridge room watch, I would go topside and spend the night on a folding cot Siggy had resurrected from somewhere within the TOLEDO's holds. There, surrounded by the small deck's canvass encircling sides, with both port and starboard ladders constantly guarded by my trusted friends, I would lay awake as long as I could watching the heavenly array above, the moon's graduating pathway from a pinpoint of light on the horizon to a broad spectrum of gold outlining the TOLEDO's long, black hull and its jutting white superstructures. It was fascinating to see the constant change of light and shadow as the ship rocked rhythmically in a deep sea's undulating peaks and valleys. To see the tiny masthead light trace a pathway against the darkness of the sky. There, the flying bridge, the light and shadow effects over the black main deck and the quiet eeriness of the ship itself interchanged with the repetitive motion of a clock's pendulum swinging slowly, rhythmically from side to side. The memory of such nights remain as a thing of joy and delight I have never forgotten.

With the morning there were ropes to be spliced, knots which must be learned and tied, the repair of a rope-ladder, the sewing of a piece of canvass or flag signals which the wind's intensity had whipped loose.

(Concluded on Page 68)



SS "H. M. Flagler" at West India Oil Dock, Balboa, C. Z.

The Tanker, H.M. FLAGLER (WOGR) was home to many radio officers during her life from date of launching in 1918 at Newport News until she was retired from service, circa 1945. Included among the names of Radio men who served aboard her was that of member ANTON B. "ANDY" ANDERSON - 1566-V. The speed of the Flagler was 9.9 knots. She was single screw, 478 feet long and had a cargo capacity of 92,180 bbls. During her life, she was crewed by several nationalities. First by American, then in 1939 when sold to Panamanian interests, a Canadian crew took over. She reverted to an American crew in 1940 but in 1941 a Danish crew manned the ship. She missed being torpedoed in May 1943 north of Cape Farewell Greenland when a ship in the same convoy directly ahead went down in 45 seconds. She also sent out an "S O S" call in 1944 when in danger of foundering due to heavy weather. Her position at the time was 36° 10' N., Latitude, 72° 36' W. Longitude. She was badly 'down by the head' and the U.S. Navy responded to her call for help but she made New York under her own power. Thanks to member Anderson for the picture of the Flagler.

SMALLEY - SEA INTERLUDE

During the dark of night I came to know the creakings of a ship, its moans and groans as metal against metal or wood rubs with the churning and pitching of a ship. The ghostlike, haunting slap of ropes against a masthead. The reverberation of tons of sea belting its might against the TOLEDO's hull. The shrill, piercing whistle and screech of winds packing their forces into crevices, corners and seams. The sheen of rain pelting against the thick glass of a porthold, striking against the bridge room windows and drenching you the moment to go outside. The silent swirl of dense snowflakes gentling down over a ship like noiseless white bullets intent on battering through the TOLEDO's thick steel deckplates; and at times so dense it seemed as if our ship were enclosed within an ornamental glass paperweight vigorously shaken.

I came to know the chilling touch of a thick, heavy fog on my face. How it penetrates deep inside to the very marrow of your bones, making you cold, shivering and shrivelled whether you are in your bunk, regardless of how many clothes you put on to warm your body. How everything is damp, wet, soggy to your every touch.

I came to know what it means to stick at your job out there through howling, blustering weather. What it feels like to know your ship has suffered damage, that the life of everyone on board, including your own, can depend upon your ability to keep going, to keep the ship's only link for help operative.

With the passing of several months I realized that although there was much about my job I enjoyed, it was not the kind of life I wanted to live for years on end. So, for professional and personal reasons as well, I made the decision to leave the TOLEDO.

Finally, the day came when I was happy to see the big ship enter what, for me, would be a final docking. But I have also to admit I felt a sense of sadness at the prospect of leaving the TOLEDO.

I watched our down harbor voyage through the radio room's porthold until the ship was secured at the Cities Service refinery dock in Quincy, Massachusetts, locked the radio "shack" for the last time, picked up my suitcase from my cabin and, taking a last look, went outside.

The TOLEDO's deckhands were shoving the ramp across the deck. The guard railing was removed and the gangplank lowered to the dock and secured. Knowing that the bulk of the men were always eager to go ashore, I waited until they left. Suitcase in hand, I walked down the starboard ladderway and onto the main deck.

When I neared the gangplank, I was surprised to see "Chips" converging there too. As I neared the entrance I noted that he was holding one hand behind his back. He stopped, withdrew his arm from behind him and held out a pair of hand-hewn sandals with a canvass strap across their insteps. "Uh," he grunted in his best English moving them toward me.

"They're lovely, Chips," I told him. "Thank you."

With the words "they're lovely," his shoulders straightened, his eyes brightened and he smiled. In all the months I had been on board I had never seen or known "Chips" to stand as tall or look as happy.

Once down the gangplank onto the dock and walking alongside the TOLEDO's portside, I had a strange feeling I was forgetting something. Something that belonged to me, something I treasured, seemed to be back there on the ship.

I had packed carefully, checking and re-checking the radio and auxiliary rooms, the bridge, chart room and topside, for I knew I would not ever be coming this way again. Since there were only two places in my cabin for keeping my belongings, a 5-drawer chest and a few pegs along the aft bulkhead for handling clothes, I knew I had not left anything there. So, what could it be? I had not left anything, anything tangible, that is.

Reassured, I went on. But I kept wanting to turn back. The thought persisted. Beyond that curve in the road ahead, I would catch a bus and thus begin my return to live and work in the so-called civilized world.

Just before the turn in the road, my feet moved more reluctantly with each step. Unable to continue, I stopped and looked back. Captain Moller was standing out on the portside bridge wing. He took his cap off, raised it over his head and waved it back and forth, slowly. I waved back—and walked on.

In the months following my departure from the TOLEDO I often scanned the daily newspaper's shipping news column for information as to the ship's operations and whereabouts.

Then, in World War II, as an Air and Sea Rescue Controller with our sea-going branch of the military, a report of the TOLEDO's torpedoing and sinking in the Gulf of Mexico, came across my desk.

I tried several times to read the report. But, for me, the print always blurred. I was never able to read it through.

Yes, this recent news article concerning the first acceptance of one of our young women by a marine academy interests me. For, if you were to ask whether she and others of our sex can hope to find a life working and living on the high seas, my answer is they can, without question.

I have to admit that when I first started going to sea and an entire crew of Russian women, with the exception of the captain, pulled in alongside the TOLEDO, my eyes bugged-out noticeably. But after living with an all-male crew for many months, I am convinced that our American women can do as well—maybe even better than the Russians.

After all, what do they have that our women don't? Communism? We have freedom! Freedom to work and live how and where we choose, with equal pay, promotion and advancement—possibly, some day, even to the rank of captain?



Thanks to SWP Member Albert L. Woody 539-P (W7WQ) for obtaining the story of Mrs Anne L. Smalley. We think all of our members will enjoy "Sea Interlude"

EPISODES & EXPERIENCES



Defined by Webster. . .

Episode

- (1) An incident in the course of a series of events in a person's life.
- (2) An incidental narrative or digression in the course of a story or writing.
- (3) Unusual events.

Experience

1. A particular instance of personally encountering or undergoing something.
2. The process of personally observing, encountering or undergoing something.
3. The observing, encountering or undergoing of things generally as they occur in the course of time.

"TALES & STORIES OF THE WIRELESS PIONEERS"

In the previous chapter have brought you the observations and experiences of members of the Society or those in the profession and provide substantial coverage of the subject that they write about.

Conversely, "EPISODES & EXPERIENCES" bring together in this Chapter or Section, a sort of 'thumb-nail' narration of an individual 'happening' or event which 'Sparks' thought of unusual interest. It may be very humorous or it may be packed with a few moments of supreme excitement in an operator's life. The mood will change in nearly every story. Some, nostalgic packed with emotion and deep-felt sentimental recollections of days of long ago. Others will relive the drama of SOS calls or emergencies which occasionally were of short duration. It is the story of wireless and radio men from around the world. Drama, excitement, violence, hysteria, frantic actions, exhilaration -- you will find them unfolding as you read the experiences of members of the Society of Wireless Pioneers.

The name of the author for each Episode or Experience will be found at the end of each story.



SUPERIOR—"Rag-chewers Paradise"

The superintendent in charge of hiring and firing operators for Great Lakes freight and passenger vessels in the early 20's was known to be very strict. But his greatest hangup was a livid hatred of rag chewing and illegal chat between ship ops.

Monitoring for such offenses from his Cleveland office, he tagged many an operator and eventually had him on the carpet.

However, Lake Superior was well out of range of Cleveland in daylight--and that's where and when the boys got together for "chewin' sessions"--their antenna switches open and reduced primary input to the spark transmitters to insure limited, short-haul coverage.

(Continued on Page 76)

(Continued from Page 75).

During a hot August afternoon, with about five freighters engaged in a bull session, we were stunned to learn that the mouthiest one of the bunch was our boss from Cleveland.

"Taking my vacation on this tub," he pounded out. "Don't let me worry you THIS trip."

--"FO" 586-P

Ten Terrible Seconds

Hyman Wallin's Tale of the Moments That Followed an All But Fatal Mistake

This is a yarn about a couple of ropes. The yarn—well—it's told by Herman R. Wallin of 4524 8th Ave., Brooklyn, N.Y. Herman is supposed to be the adventurer and principal character in it, but somehow or other the ropes managed to take over the story.

One of those ropes chisels into this story solely on the strength of the fact that it—well—that it just wasn't. If we mentioned it here, it's only to post it as A. W. O. L. at a time when it was needed for guard duty. The other rope comes in at crucial point in our story. Like the hero of the old ten-twenty-thirty melodrama it shows up in the nick of time to right the wrong the other rope has done and prove to the world that though some ropes may be low down and ornery, there are good ropes as well as bad.

And now that I've told you the plot of today's little drama, let's bring in Herman Wallin—and on with the show.

Today, Herman is a radio operator on the S.S. BIRKENHEAD, but this adventure happened in July, 1926, when Herman was occupying the radio shack of the S.S. CORNELIA plying between New York and the West Indies. The CORNELIA was almost at the end of her "out" trip—just two or three hours' run from the first of the tropical island ports at which she was due to call.

It was a dark night, and Herman was on the lower deck, making his way up to the boat deck where his room was located. And—well—before we go any farther with this yarn we'll have to tell you something about the way the S.S. CORNELIA was constructed. Suppose we let Herman do that himself.

"My radio shack," Herman says, "was on the after part of the boat deck—the only quarters located on this part of the ship. A few feet away from my room, on either side of the shack were davits for two lifeboats which had been removed. Since the members of the crew seldom came up on this deck, and then in the daytime only, no ropes had been stretched across the openings between the davits."

And there you have not only the layout of Herman's sea-going pent-house but also the lowdown on that rope that just wasn't there.

That missing rope was quite a problem. You know they don't have any open lights on the top deck of a ship because they interfere with the vision of the officer on watch up on the bridge. On nights when there wasn't any moon, Herman used to have to watch his step pretty carefully. Usually he would

start walking from the ladder in a straight line, counting out the number of steps it required to get to his door. But on this particular night he paused half way in his course and looked back.

Lot's wife was turned into a pillar of salt for stopping and looking back. Herman just sort of lost his bearings, but that was almost as bad. When he started out again he was going the wrong way in the dark. He was still counting steps when, all of a sudden he went through an open space between two boat davits—and walked overboard.

And then came those ten terrible seconds—the worst moments in Herman's life. It felt as if time had been slowed down like one of those slow-motion movies—seemed as though that dive from the top deck was taking a year. Herman can still count over every one of those seconds—can still remember how the lights of the lower deck went crawling past him as he fell. One of his arms grazed the rail of the lower deck as he went by, and through his mind flashed the thought that that rail was the last thing he could possibly have caught hold of.

Below him now were only the smooth steel plates of the ship's side, straight down to the water line. Herman thought of the propellor, threshing the water at the ship's stern and remembered hearing that anyone falling overboard close to the side inevitably gets sucked into the vortex of the churning water and chopped to mincemeat.

The water was coming up at him now. He could see it gleaming dully beneath him and he braced himself for the shock of hitting it. Then, suddenly, his left arm hit something—hit it with a sharp, stinging blow that bent it double and almost took Herman's breath away.

Herman didn't know what it was, but instinctively he made a grab for it. He caught it—and his hand skidded several yards along a wet, slimy surface before he realized what it was. A rope! A missing rope had gotten him into this spot in the first place. Another one—a rope that was very much present—seemed to be helping him out of it.

Herman clutched at that rope until he thought his arm would come off. "My feet were dragging in the water as I came to a stop," he says, "and the tug of the water added to the strain on my hands. I heard faint shouts above me. The engineroom telegraph rang and I could feel the side of the ship shuddering as though it had hit some obstruction in the water. Then I could see heads thrust out over the deck rail and several voices were calling to me to hang on. A couple of men sitting on the lower deck had seen me flash by and had shouted to the officer on watch to stop the ship."

A rope ladder came over the side and a deckhand came down to help Herman back aboard. "When I reached the deck," he says, "I was so weak with fright that I couldn't stand up. They took me to a stateroom and put me in a bunk. Outside of a few bruises and a pair of skinned hands, I was as good as ever in a few hours, but I saw to it next day that a couple of lines were stretched between those empty boat davits."

And in case you're wondering what that other rope was doing hanging over the side of the ship, here's Herman with the answer. "It was what is known as the guest line," he says. "It's a heavy rope put over the side near the water's edge and used to tie small boats and launches near the gangway. The ship was approaching the first of our tropical ports and this line had been put out only a few hours before."

Written by Floyd Gibbons and reprinted from the New York Journal issue of Nov. 10, 1936. Hyman Wallin is member - 426-P.

The 'Bug'



When cw became the only permissible form of emission on the air the semi-automatics could at last be used for radio operation. But the Bug began as a land line key, and if, for a while, I sound as if I were subsidized by Vibroplex Company, I'm not, it's just that the story of the bug is the story of Vibroplex, and here's why.

The word "bug" is now a Vibroplex copyright, but as a telegraphic term it was used on the wires long before the semi-automatic keys made an appearance. "But," in the early days of the telegraph was good, colorful box-car profanity that implied a definite canine strain on the maternal side of the family tree. It was used to describe the inefficient "plugs" that we call a "lid" today who had fists that even a mother couldn't love, except on payday. Now, as early as the 1870s there were some types of semiautomatic keys that were very poor, and because of little, or no damping produced split dots. The "kings of the wire" who were proud of their ability to be able to hand send huge loads of copy each day refused to have anything to do with them, and condemned them all as "fit only for a bug to use," or as a "bug's key." That was before the superb Martin design that redefined the word from one of opprobrium to the proud name that is the legal copyright of Vibroplex today.

When Horace Martin received his first patent for what he termed a "semi-automatic telegraphic transmitter," and, by the way, that is still the correct name for it, he sewed up the entire field in 1902, for, with those eight pages of specifications and drawings, that included every possible method of making dots automatically, and dashes manually, he literally slammed the door on all challengers, with one exception.

Now that 1902 key was a far cry from the model as we know it. It was battery powered, with two magnets to hold the lever while the dashes were being made, and even Martin didn't like it very much. In 1904 he received a patent for the design that we all know today as the "original," and the name Vibroplex was granted a copyright. The only difference between the 1904 model and the present day one, is the way the dot contact is mounted on the vibrator, and in 1906 this was changed to the present

system. From 1904 on the excellence of these keys was recognized by the telegraphers, and they began appearing on the wires everywhere. In those days to get one all an operator had to do was pay Martin five dollars, and several days later the key was handed to him. All the early Martin Vibroplex were custom built by him in his shop at home.

Martin was never satisfied, he was always finding new designs to fit the key to some special need. In 1911 he produced one with two levers, although the dashes were still manually created. It was called the "Double Action Bug." In 1915 he saw the need for a small size key that would be more convenient to carry to cover sports events, or special field operation, and "Vibroplex Number" appeared, we call it the "Blue Racer" now. Then, in 1917 he really came up with a strange one. Now there is nothing so crowded as a Wire Chief's desk, space is at a premium, and there is really not enough room for even the #4 bug, so, Martin designed the "Wire Chief's Key," or the "Upright Model." It was nicknamed the "Vertical Bug" immediately. This key has only one contact that is utilized for both dots and dashes, with a stop to hold the lever still when dashes were being made. This style was discontinued about 1925.

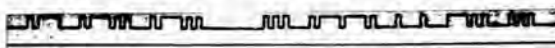
There were many companies who tried to buck the Martin patents and produce this very popular key, but only one was able to bypass those blanket specifications of 1902. The Mecograph Company of Cleveland, Ohio, manufactured the so-called "Right Angle Bug," or "Mecograph Key." An invention of Benjamin Bellows of Cleveland, which was an improvement of an earlier Coffe patent, with the loop hole being that Vibroplex makes dots by creating tension on the spring, while the pendulum action of the Mecograph was made by release of tension. There were four different models produced until they were absorbed by the Vibroplex Company which was then known as the Martin Vibroplex and Mecograph Company, in 1914, with the J.E. Albright Company as sole agent for these keys. About the beginning of World War One, Martin and the Albright Company teamed up using the name The Vibroplex Company. Martin finally left Vibroplex and went in to business for himself producing the "Martin Flash Keys," and in 1939 he sold his dies and patents to the J.H. Bunnell Company.

But there were other semiautomatics than Vibroplex for it isn't very hard to make one, and plenty appeared briefly on the market, but only briefly. The Albright Company convinced the telegraph companies and the railroads that Vibroplex was the only legal key with plenty of law suits to prove their claim so that no other could be used on the wires. Now you know what would happen if you went to Field Day with your pet bug and were told that you couldn't use it, that only the keys on the desk were permissible. Well, the telegraphers told the companies where they could put theirs too and it almost caused an operators' strike, you simply cannot dictate to a telegrapher, or a cw man. So a compromise was reached. If the key came up to specifications the operator was allowed to purchase a brass plate reading:

"Not manufactured, nor guaranteed but
only licensed by the Albright Company."

followed by a special serial number. The telegrapher shelled out two bucks, attached the plate to the base of his bug, and lo! it became legal. These keys have been nicknamed variously: "The Albright Key;" "The Legal Bug;" "The Legitimate Key;" and most often, "The Bastard Bug," by the operators.

(Turn to Page 78 - bottom Col. 1).



EPISODES & EXPERIENCES

IT HAPPENED TO ME!

As a radio operator aboard ship, one of my duties is the daily copying of the Press Reports. While off the Coast of Senegal, West Africa, one morning about four a.m., I got up from my bunk to get this news bulletin. I still had about fifteen minutes to wait and as I sat at the desk of my radio receiver, still quite sleepy, I faintly heard what sounded like my father's voice, calling me by name.

I removed the receivers from my ears and looked around, but everything was quiet but the throbbing of the ship's propellers and the faint rushing of water against the ship's side as the vessel moved through the water. I sat down again, clamping the phones on my ears again, and once more I heard him calling me by name. The voice sounded weaker this time and then stopped.

On our arrival at our next port of call, I wrote to my father, telling him of my queer experience. Mail in West Africa is slow, as few ships ply those outland ports. About six weeks later, on our way up the coast on the homeward trip, I received a letter from home telling me that my father had passed away. The letter also gave the date and time.

On checking back on the time and date, I found that he had passed away at exactly the same time I had heard him calling to me.

Hyman Wallin - 426-P

The Wireless Station at Cocos

Recent light shed on the circumstances immediately preceding the destruction of the German raiding cruiser EMDEN, Captain Muller, at the Cocos, or Keeling Islands, show that a "heathen Chinese" had a good deal to do with the luring of the wily, though very much overrated, Hun captain, to his doom when he landed his party to destroy the all-important wireless station there, on that 9th of November, 1914. The station is on Direction Island, the most northerly of the southern Keelings. A boatload of Germans was sent from the EMDEN to destroy the station, and after landing they commandeered a Chinaman to lead the way, which he did by a circuitous route, having in the interim "given the tip" to a countryman to get there first, which he did, with the happy result that just in the nick

The Bug

When the patents expired there was a rush to make hay on this type of key and everyone tried and usually did get into the act. Logan, Bunnell, Lytel, McElroy, Signal, Dow to name a very few. And, in the 1950s the only one designed to make dashes as well as dots automatically, the Melehan "Valiant." Only about 3 or 400 of these were made because the electronics were beginning to appear and were far easier to operate.

--Louise Ramsey Moreau, WB6BBO/W3WRE

THE SOCIETY OF WIRELESS PIONEERS

of time the operator got through a message which was picked up by H.M.A.S. SYDNEY and the MELBOURNE. "Strange warship off entrance," it read, and "Full speed ahead," was the order to the cruisers, and the fate of the EMDEN was settled. Her party had lost a valuable hour in blowing up the wireless station and cutting the cable--the dummy one--for the genuine cable was never touched; the staff having rigged up a decoy cable. The Huns overlooked the fact that there was a duplicate set of instruments very cleverly concealed, with which the service was restored shortly after the raider fled to his doom. The Chinaman, who was a servant of the Cable Company, was suitably rewarded.

--ELECTRICITY, London - 1921



Calliope Cappers

During the Mardi Gras last year, the paddlewheel steamer DELTA QUEEN took a capacity load of vacationers down the river from Cincinnati to New Orleans. There we tied up at the French Quarter and discovered the U.S.S. ATULE, a Fleet Submarine also there on a visit from her Key West base. The old Navy spirit prompted me to invite her personnel over to enjoy some hospitality aboard our steamboat, so I got up on the Texas deck and proceeded to serenade the Submarine on our Steam Calliope. I played ANCHORS AWEIGH and a couple of hornpipes, then began synchopating the music into Morse Code, addressing a message to the Captain and his personnel to pay us a visit.

The surprised Radioman on the deck of the Sub dashed below to report to his Skipper, "Captain, there's some Nut over there on that Paddlewheel Steamer playing music on the whistles and sending us telegraph messages."

"So what is he saying?" demanded the Captain.

"He is inviting us over for a visit, Sir."

The Sub's Skipper let his off-duty section and a few officers come over, and we took them along with us on a tour of the harbor we had arranged for some city officials, during which refreshments were served. And the Captain of the Submarine reciprocated by inviting our personnel and our passengers over for a visit and inspection of his vessel, which was an unexpected dividend in the Mardi Gras program.

And the Radioman of the U.S.S. ATULE now boasts that he copied 20 words a minute from a Steam Calliope.

--Cdr. E.J. Quinby, USN (Ret.)

EPISODES



& EXPERIENCES

The Graveyard of Ships

This is a story of the Columbia River bar, and of one of the ships that crossed it back and forth.

The Columbia River bar, located at the junction of the Columbia River with the Pacific Ocean, and lying between Washington and Oregon, has long been known as the "Graveyard of ships."

In dirty weather the bar is a very bad spot for any ship. There are sand spits and shoals which lay hidden beneath the treacherous waters. Any ship, blown from its course, and ending up on the Columbia River bar faces tragic death and destruction to the men and ship!

Heavy seas often break the entire way across the bar and when they do it results in an extremely dangerous situation! Many a ship has piled up on Peacock Spit, most often being lost with all hands!

Among the many ships lost on the Columbia River bar were the Rosecrans (36 lives); Francis H. Leggett (65 lives); Iowa (34 lives); Sylvia de Grasse; George Olson; Multnomah; and many more! Several hundred lives have been lost on the Columbia River bar over the years!!!!

The first job the Marconi Co. assigned me to, in 1914, was the Columbia River bar tug the 'ONEONTA' (WPX), stationed at Astoria, Ore. She was a steel tug boat having a power plant delivering 950 horsepower, built in Portland, Oregon, in 1910, and was especially designed for her dangerous work. In addition she had a powerful towing engine, designed especially for work on the bar. The ONEONTA is credited with having been a veteran of many a hair-breadth rescue from off of the Columbia River bar.

Frankly, the WPX was a lousy job, but I suppose everyone has to break in somewhere. Purely as a seagoing job she wasn't too bad. However, with the

Pages of the Past

wireless room located below decks and in a room shared with the first mate, plus the infinity of bedbugs, it added up to a very unpleasant situation indeed!

Whenever the bar was breaking, hard and dangerous work loomed ahead for the ONEONTA. Her job was to fight her way through towering seas out across the bar either to put a tow line on some ship in trouble, to put a bar pilot aboard some incoming ship, or to put a line on, and tow a sailing ship across the bar into Astoria. (There is an excellent picture of the ONEONTA fighting her way across the bar on page 27 of "Pacific Lumber Ships" by Gordon Newell and Joe Williamson.)

On the other hand, there were times when we would tow a sailing ship from Astoria, out across the bar into the open sea to where she was able to take care of herself.

The Columbia River bar is acknowledged as having some of the most treacherous, most violent, and nastiest surf to be found anywhere. There were times when I wondered if we would make it across! So often when we were heading across a badly breaking bar, the pilot house would be completely covered under green water. The ONEONTA would cut right through the middle of a towering wave, decks awash with tons of water. She would come out from under and ride right through the next one. There were times when I was really scared!!

Let us all join now in singing "Crossing the Bar"!

--Herbert J. Scott

Ammeter on brain-pan swings hard right

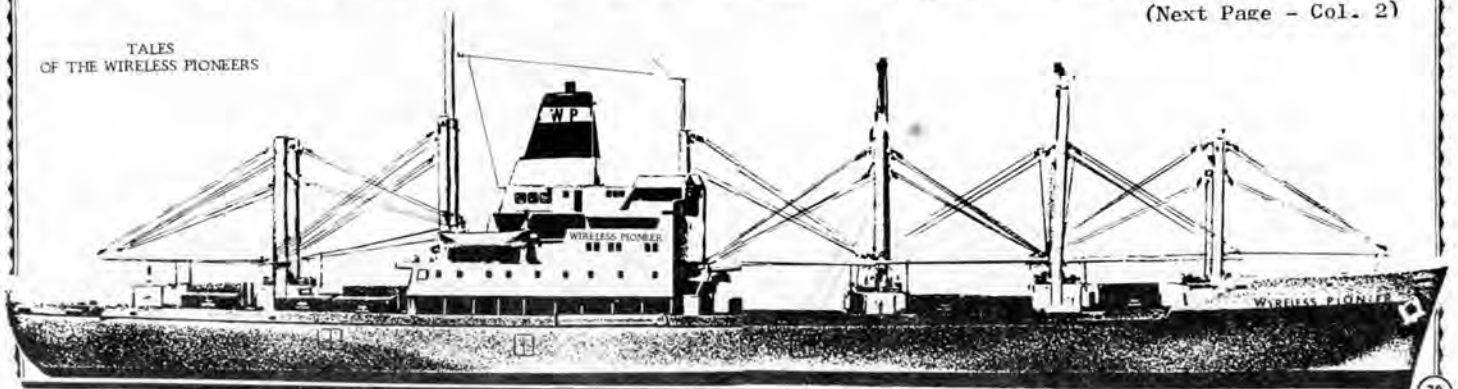
Dramatic highlights of the Wireless Pioneers who helped pioneer airmen make history in the first trans-ocean flights.

"Sparks 1" gave a shot to the old brain-pan so thought I'd send in a few of the waves which resulted. Something to do with our aid to pioneer aviation and, perhaps, some near-misses to glory? I'm sure we've all had our near-misses and some worth recounting. This is off the top of my head but may inspire others.

USS Virginia, 1917-18, Atlantic Ocean. Surprised to find a biplane floating around far out to sea. "What's that thing doing here?"

(Next Page - Col. 2)

TALES
OF THE WIRELESS PIONEERS



The EASTLAND Catastrophe

Standing out prominently amid the awful scenes which marked the loss of lives following the capsizing of the steamship Eastland at her dock in Chicago on July 24th, are the deeds of several men who unselfishly put thoughts of their own safety behind them and aided others to escape death. Among these is Marconi Operator C. M. Dibbell. From the minute the ill-starred craft began to list until she had careened over on her side, he was active in striving to avert the disaster and save lives, remaining on the vessel up to the time the Chicago authorities took charge of the rescue work and ordered him to go ashore.

The number of known dead is estimated at 839. One hundred and forty-two persons are missing.

The Eastland, which had been chartered to carry employees of the Western Electric Company on a picnic to Michigan City, Indiana, was crowded with passengers said to number approximately 2,000 persons as she lay in the Chicago River ready to steam away. Twenty minutes before she turned over she had a considerable list to port and Dibbell walked to the starboard side of the vessel and looked over the rail on to the dock. A watchman there shouted that it would be advisable to gather the passengers on the starboard side. Dibbell then attempted to move the members of the crowd to port. Few seemed to realize the danger they were in, however, and showed no inclination to follow his directions.

In the meantime the Eastland kept listing. Gradually her deck took on a sharp angle and the more cautious among the passengers took up positions near the starboard rail. They did not equal in numbers those who were on the port side, however, and suddenly the vessel careened sharply and turned over. Dibbell clung to the starboard rail and helped those who were not able to aid themselves to clamber on to the side of the vessel. Thus many of the survivors made their way with little difficulty to the tugs and launches which had come alongside the overturned craft.

--THE WIRELESS AGE. Sept., 1915

MARCH, 1915

THE WIRELESS AGE



A LIFE ON THE OCEAN WAVE

A life on the ocean wave,
A home on the rolling deep;
Where the scattered waters rave,
And the winds their revels keep!
Like an eagle caged I pine
On this dull, unchanging shore:
Oh, give me the flashing brine,
The spray and the tempest's roar!

--From the poem by EPES SARGENT (1847)

THE SOCIETY OF
WIRELESS PIONEERS



Through
the
Porthole

"Charlie" Dunn Recalls



Sikorsky amphibian used on early routes.

SS West Sequana, 1927, S.F. for Shanghai about 500 miles from S.F. Alerted to watch for missing Dole Flight planes. Lookouts spot a flare at midnight. Report radioed to Coast Guard. Skipper and I flooded with appeals from newspapers for story of Mildred Doran if rescued. Only woman in flight, only story requested. No luck after night and day search among fog-patches. To sleep after 36 hour watch.

SS Golden Coast, 1935-37. Staying up nights listening for "China Clipper" and other pioneers crossing Pacific by air. Supplied them with position-fix, WX and QRX for emergency if any. Damn glad when they finally got their own freqs and we stopped losing so much sleep.

SS Golden Coast, Gilbert Islands, 1937. Amelia Earhart due from direction of Marshall Islands and straining ears to hear something from her on 500 kc; but no luck - the critical time came and went.

SS President Cleveland, 1939, mid-Pacific. Richard Halliburton's "Sea Dragon" trying to get Coolidge on 8280 with barely audible sigs. We take two for the Coolidge and rap with Petrich an ARTA brother from Portland. He gives ugly picture of storm, bad conditions of junk, food spoiled or gone; but no SOS. Think this is the last time anyone worked him. Another case of the master hanging tough too long on the SOS? Power or antenna failure for radio, then probably foundering for junk.

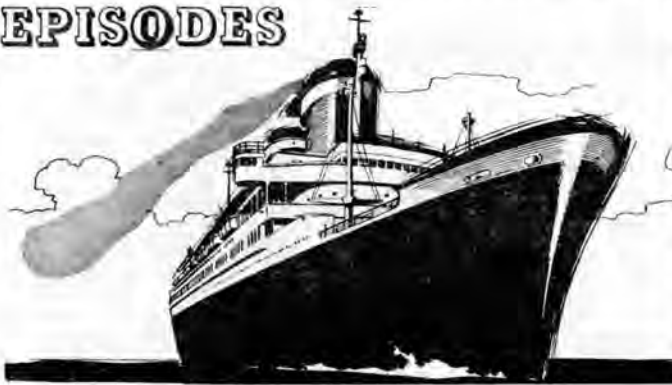
"They also serve who only stand and wait."

Or, in our case, "Sit and listen?"

Anyway, we did our best to help the pioneer over-seas fliers and they have been able to do things for us, too. But what they've done to our passenger business is a scandal to the Jaybirds. . . .

Charles M. Dunn 115-P

EPISODES



& EXPERIENCES

The Log of George C. Wilkins Sr.

Have thoroughly enjoyed "SPARKS" 1 and have decided I'd best send in my two cents worth before I appear in the Silent Key Department. Here and there I run across someone I have known in the past, but they are getting fewer and fewer. Perhaps someone will recall me, but I doubt it.

My start in 'Wireless' began back in Marysville, Ohio back in 1913 or thereabouts when my first rig consisted of half of a Ford spark-coil for the xmtr and a very complicated rcvr. . . a needle laying across two sharpened dry cell battery carbons for a detector and one of the old-fashioned long telephone receivers. The antenna was a section of one of our clothes-lines. Worked clear across town in great shape. In fact got out to a place in the country nearly nine miles away. Would have been great in these days of TV and Radio!

The Ham Call Book put out by the Government at that time was not quite as large as a Reader's Digest with no ads. As I was unable to work over the State line I just never bothered to get a ham ticket.

By 1915 I had progressed to a half KW rotary spark but decided to go all out and went to Chicago where I passed the exam for R/O First Class. Having obtained this I had no idea of how to get a job or just what to do if and when I got one.

The Marconi Co. of America had a school down on Duane St. in New York taught by Elmer E. Bucher and right next door to where E. T. Edwards and Mr. Duffy did the hiring. Spent about six weeks in school there and then went in and applied for a job. The waiting room for the young hopefuls was called the 'Static Room' and if Duffy had anything for you he would pound out your name with a buzzer.

My first assignment was the Russian Volunteer Fleet ship, the "Vologda" who was awaiting a shipment of high explosives bound for Arcangel. Luckily for me the cargo wasn't ready and we went to Matanzas, Cuba for a cargo of sugar. I was the only one on board with one or two exceptions who spoke English. The gear was of some foreign make, but we had little if no traffic so had no difficulty with that part of the job.

On our return to New York the cargo still was not ready so they transferred me to the old 'Maracaibo' of the Red D Line. Her call was KDM and we ran

between New York and Maracaibo with stops at La Guira and Curacao. She had a 2 KW Marconi rig with either quenched gap or synchronous rotary. Don't recall the receiver except that it had only a carborundum detector and of course no amplifiers. Never heard of such a thing.

Early in 1916 I joined the tanker 'John D. Archbold' which was being equipped with deck guns and readying for a trip to France with airplane gas. Our trip over was quite uneventful but when the convoy we were expected to join was ready to take off our two anchor chains were so badly twisted up that we missed the boat, so to speak, and the Old Man decided to try it on our own. Two days out of Brest they sighted a sub way ahead of us but out of range of the bow gun, even at highest elevation.

While everyone was watching ahead another sub came up astern un-noticed and put a torpedo right into the engine room. One of the black gang escaped but the others died. Both stern lifeboats were put out of commission and neither of our guns could be used due to the angle of the ship.

One sub surfaced and ordered all hands off the ship as they were about to sink her by gun-fire. I had no word from the bridge as to our position or anything. The Old Man came by the shack in his shoregoing clothes and wearing a straw hat. I gave him a hail and asked for some info. The mate sent down our position and I fired up the emergency power, (a ten inch spark coil and six volt battery) our rotary gap had to be set for minimum clearance and left stationary for emergency use.

My SOS was answered at once and rebroadcast by GLD, the Land's End station, so I pulled the switch and prepared to take off. Everyone was in the lifeboats but the skipper, the first mate and me and the sub was standing by ready to let go with their deck gun.

The mate suggested that I run up to the bridge and pick up the licenses and, like a damn fool, I did, but stopped by the shack long enough to get my own. Still have this memento.

We were eventually picked up by a small converted French yacht, the 'Engageante', to whom I signalled by means of a lifeboat lantern under my jacket telling him that the sub was just astern of us and to look out. He acknowledged and we proceeded to board. As I was climbing the accommodation ladder to the patrol boat the sub let go another torpedo which, fortunately for us, was set too deep, but which passed right under us MM. We eventually got back to Brest where we stayed several days before being shipped down to Bordeaux, thence back to New York on the French passenger liner, 'Espagne', arriving in N.Y. on the Fourth of July. (1916)

By this-time I decided I'd better join the armed forces if I didn't wish to wind up in a trench, so joined the Navy Reserves and was sent, of all places, to NAA from whom I had first started to learn code! I spent several weeks at the transmitting site in Arlington, Va. and then to the operating position in the State, War and Navy Bldg. in Washington. Tried unsuccessfully to get transferred to sea but was turned down repeatedly. Finally was sent with a detail of men to Otter Cliffs, Maine, where we had receivers set up to monitor all European stations 24 hours a day. Drs. DeForest and Pickard were both there several times experimenting with different types of antennas, and there were some wild ones.

After leaving Otter Cliffs I served at NAB, Portland, and also a short stay on Light-ship 74 and finally wound up at NAD, Boston. First at the Navy Yard and then in the Little Bldg. Boston.

NOSTALGIC MEMORIES OF DAYS LONG AGO

George C. Wilkins Sr.

Then back to sea on a merchant freighter, a Hog-Islander called the 'Babbosic.' She was a mess. On our homeward trip bound for New York from various European ports in mid-winter she started to break in two and we were forced to stop in the Azores and Bermuda, the latter for food.

She finally made it into Norfolk, where I guess all hands left the vessel. I caught a berth on a ship bound for the West Coast with return passage paid. Decided to try the West Coast for a while, so sold the ticket and waited a week or two before I landed another job out of San Francisco. This was a good run. Up and down the West Coast through the Canal for a number of European ports and return. Good officers and crew and good pay-off . . . (as wages went in those days, Hi.) By the way, when I started going to sea I made \$25.00 per month and had to furnish my own uniform . . . MIM.

A shipmate and I decided to take a trip to Hawaii which we did, sailing on the old Matsonia, first-class, yet.

I wound up working for the Hawaiian Electric Co. as high line inspector, but had an offer for a pretty good job back in Ohio so went back long enough to get married and raise a family, always hoping to get back to Hawaii. Then came the Great Depression, and I hope we are not heading for another.

After Dec. 7, '41, Walter Winchell was urging any and all electronics men to go to Pearl Harbor and work for the Navy. I went to Dayton, O. and put in my application and eventually got my orders and transportation. Arrived at Pearl on Feb. 15, '42 and stayed on until VJ Day. Meanwhile I had allowed my license to lapse so took another exam before leaving the Navy employ and had a job lined up as soon as I was free. This was a little Interisland Steam Navigation passenger and freight vessel which called on all the islands and after about six months I left her to go to work for R.C.A. at their station, KHK in Kahuku, Oahu. Helped install the gear and stayed on to operate the station. Too far from civilization and hard to get transportation so left them to join Mackay Radio in Kailua where I went through the same deal as with RCA. That is, install equipment and remained to operate at KJU which station closed (for ship-shore service) after a strike. I remained on as shift-engineer until retired at age 65. During the strike I worked as over-seas communicator for CAA (now FAA).

Since retirement I have actually spent more time at sea than in earlier years. Have worked for Matson, States Line, States Marine, President Lines and others too numerous to mention. Many trips to Viet Nam, Far East, around the world, up and down both U.S. coasts, South America, etc., etc., but guess am grounded for good now.

Have taken two vessels to Taiwan to be scrapped. One nearly capsized in the South China Sea but we made it in with a 30 degree list but still afloat.

George C. Wilkins, Sr. 1110-P KHGEWA
44-527A Kaneohe Bay Dr., Hawaii 96744



A LIVING EPISODE

53 YEAR SPAN BRIDGED BY SWP
(Happy Reunion of Old Timers)

It was in 1920, some 55 years ago, that Henry Barker (633-SGP) who was in charge of the Marconi/RCA shop in Seattle, and myself revamped the P-8, 500 Hz, 2 KW, Quenched spark gap transmitter on the "Kamchatka" so that it would work on 2,000 meters as well as the standard 600 meters, in order that the ship could communicate with the Russian 'Telefunken' stations in Siberia.

Upon completion of the job, I sailed on the "Kamchatka" to Siberia and the Arctic (see "Siberia for Furs" SOWP 1975 Year Book, pg. 123). I never saw Henry after that.

He, like myself, is a retiree. Finding his name in the SOWP roster, I have corresponded with him in his home in Carnation, Washington, from time to time.

One day, prior to Christmas of 1973, to my astonishment, I received a telephone call from Henry Barker! He was in San Francisco on his way to Honolulu for some relaxation and recreation.

I had him come over to my place where he arrived about 3 p.m. Since we had not seen each other in these 53 years, we had much to talk over! We had a 'Ball' talking over "old times" and reminiscing regarding old time operators and managers we had known, and let us not forget the 'real boss' of the Seattle Office, Miss Stella Kayo.

We had him stay to dinner after which we continued our reminiscing. About 9 p.m. Henry decided he should return to San Francisco and the next morning he took off for the Hawaiian Islands. He wrote from there saying that he was enjoying the sun and warm water at Waikiki. He never mentioned the pretty young girls in their abbreviated bikinis! Wonder how come?

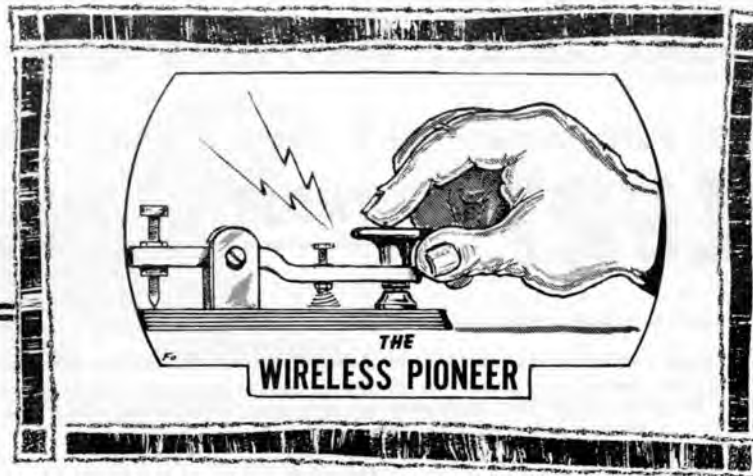
We both enjoyed a grant time together which would have never been possible had it not been for SOWP!

Herbert J. Scott - 838-SGP



THE SOCIETY OF
WIRELESS PIONEERS

My Key



And Me

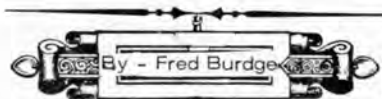
When I was a lad, a vision I had,
It took root and grew wild and free.
It was part advice, laced with sacrifice,
My key and me.

Radio theory I took, learned from a book,
Mastering Morse Code was no spree.
Between dots and dashes and static crashes,
I became a man with pedigree,
My key and me.

The job I got was on a floating pot,
It was like a circus or jamboree.
With weather reports and captain's retorts,
We worked from sea to sea,
My key and me.

Awar, then two, came on and flew,
But like the pod requires a pea,
I took a wife and changed my life,
And suddenly there were three,
My key and me.

Unlike before, I stayed ashore,
Then dangled a grandchild from my knee.
Life sifted like sand, but not quite so grand,
And I forgot the prophecy,
My key and me.



BOOK
OF THE "WIRELESS PIONEER"

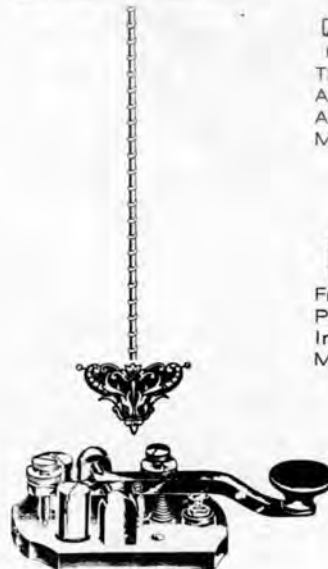


Like souring gall, years built a wall,
While I tasted fruits of the recipe.
I had what I wanted, but still was taunted,
Now's too late to break free,
My key and me.

It's gathered dust, is coated with rust,
And at times I sense a plea,
While trembling hand tunes the shortwave band,
To recall the bond of the sea,
My key and me.

The lesson I learned was harshly earned,
The price is high, not free.
A pledge that is lost is beyond all cost,
And we both secretly agree,
My key and me.

For toward the end, you comprehend,
From faded insight gleaned at sea,
Prophecy may bend, but as the Lord did intend,
In time there will only be,
My key, not me...



The untold 'S. S. Temple Bar' Story



ALERT! THOSE C.G. MEN

"EPISODE" Related by Charles A. Myers—SWP-1571

The following "Episode" is related by member, Charles A. "Chuck" Myers (Ex-Chief Radioman USCG, Ex-Chief Radioman USN and Retired Chief Warrant Officer, USAF). "Chuck" at the time of the "Episode" was Radioman 3rd Class, assigned to the USCGC DAPHNE/NRGD. Here is his story:

Briefly, the action was this ... the S.S. Templebar went on the rocks off Carroll Island, somewhere off the Coast of the State of Washington in the early spring months of 1939. The radio operator was able to send once only ...

"S O S DE GNQJ, S.S. TEMPLEBAR ON
ROCKS OFF CARROLL ISLAND, BREAKING
IN TWO, LOADED WITH SCRAP IRON.
ABANDONING SHIP, AR"

The other side of the story is . . . myself, a sleepy young 3rd class radioman of the United States Coast Guard Cutter DAPHNE just coming on watch, and relieving the watch at exactly 0400PST

My op being relieved muttered to me ..:mostly no sigs - real quiet tonight.' Our Coast Guard radio log had to have an entry every 3 minutes, or if no entry then the notation "NO SIGNALS" was typed in. Everytime a merchant marine ship sent anything on 500 KCS, we logged it, even if it was V V V de KIEK AR. Thats what our logs faithfully recorded. We stood a split-phone watch, 500 KC in one ear and our (then) Coast Guard primary high frequency CW (and Phone calling) frequency of 2670 KC, the frequency being referred to in the log as FD.

Well, My relief has gone down the ladder to hit the sack and I was fighting sleep so decided to get some "Joe". I figured a cup of engine room coffee would clear the fog away somewhat for the watch ahead.

(Continued on Page 84)

S.S. TEMPLE BAR / GNQJ

(Below)

Hit 'Quillayute Needles' on Carroll Island - April 8 1939. Photo from collection of Joe D. Williamson, Winslow, Washington.



Temple Bar Story - Myers

(Continued from Page 84)

We had an old battery operated detector-audio regenerative receiver on 500 KCS, so I tuned the volume control way up and stepped out of the radio room, preparing to go down the engine room hatch just ten feet away and a fifteen foot drop down the ladder and get my coffee and be back in a flash. Had I completed that trip, there may have been no survivors from the SS. Temple Bar.

Our Ship, the USCGC DAPHNE was singled up at Sausalito, Cal. in a part of the San Francisco Bay. It was our 'in-port' period. We went on patrol for ten days out, and then had ten days in port. While in port, the radioman spent one day on liberty and one day on shipboard duty, on either the Port or Starboard Watch, whichever he is assigned. I was on the Starboard watch, and this early morning I had the good feeling that when the sun came up and it was 0800 and I turned the watch over to my relief - my Liberty would begin, and for me that meant after walking the full length of the docks and uptown I would be drinking beer with other early morning sailors, merchant marine, Coast Guard - or Navy ... at a beer joint we supported because the beer was five cents a glass and the best looking (to us) women in town hung out there, even at 0830 in the morning!

Well, I had just started climbing down the engine room ladder and when my head was at deck level I heard it! The signal was not strong, but clear and the sending was slow and deliberate:..."SOS DE GNQJ, S.S. TEMPLE BAR ON ROCKS OFF CARROLL ISLAND, BREAKING IN TWO LOADED WITH SCRAP IRON ABANDONING SHIP A"

Well you radio operators all know how something like that will hit you. You carry the code in your head until you can put it down on the mill and be sure the time is right... I leaped up the engine room ladder, scrambled to the typewriter in the radioshack and made my log entry. I then waited...and waited...and waited. What I was waiting for was the big shore stations KPH or KFS TO BLAST THE ETHER WITH AN SOS re-broadcast and then growl an MCW QRT to any ship that dared to open up on 500. I waited. It finally dawned on me that it looked like I was the only one in the whole West Coast or the world for that matter that had copied that one SOS. Well, I had never re-broadcast an SOS before but there is a first time for every junior radio operator.

I pulled the generator switch that gave me
(upper right)



a hundred watts or so of RF on 500 KCS and re-broadcast the SOS with the preamble "SOS DE NRGD FOLLOWING HEARD ON 500 KCS, and then repeated the S O S, just as I had received it a few minutes after 0400 in the morning.

No sooner had I finished than both my earphones burst alive. KPH commenced re-broadcasting the SOS to ships and stations - Coast Guard Shore Station "NMC" called me on 2670 demanding any additional information, and for me my part was done. The rest of the watch I faithfully logged all transmissions both on 500 and 2670 KC.

The Coast Guard Cutter Onandago was dispatched from Port Angeles, Washington and despite heavy seas and generally bad weather was able to pick up the survivors who had taken to the life boats.

The traditions of the U.S. Coast Guard Radio Operator gives him a feeling of close brotherhood and fraternity with the Merchant Marine Radio Officer. As I am writing this, I know that somewhere on some latitude a Merchant Marine ship is probably calling the U. S. Coast Guard right now, if not for assistance, then for medical information or information on the weather or in some cases just a relay for a PAID commercial radio message to the United States . . . from far out at sea.

My reward for what I knew was a job well done came when after reading the logs the following day, the First Class Radioman growled to me . . . "Well there is hope son, you might even make a radioman someday".

Charles A. Myers - 1571-PA
W8LGT)

-30 -

Ex-Chief Radioman USCG.
Ex-Chief Radioman USN
Retired Chief Warrant Officer - USAF.

Charles A. "Chuck" Myers has retired to 1104 Ritchie St., Princeton, West Virginia, 24740. His services in the USCG also include assignments on the USCGC Shoshone/NRVY, USCGC Alexander Hamilton/NRDH. War years saw him aboard the USS Chase and from 1946/49 he saw Shore Duty in the U.S.N.



The sky o'erarches here, we feel the undulating deck beneath our feet,
We feel the long pulsation, ebb and flow of endless motion,
The tones of unseen mystery, the vague and vast suggestions of the briny world, the liquid-flowing syllables,
The perfume, the faint creaking of the cordage, the melancholy rhythm,
The boundless vista and the horizon far and dim are all here,
And this is ocean's poem.

—Walt Whitman

BOOK OF THE "WIRELESS PIONEER"



KGPE Police Radio, KC., Mo. 1939

Police Radio Net

The INTER-CITY POLICE RADIO TELEGRAPH NET got its start as a step-child of Police Radio in the early Depression thirties. Its purpose was to establish a reliable communications service between large Metropolitan Police Departments throughout the United States. Since many licensed Radio Telegraph operators were already employed at their radio stations, Police officials were alerted early to the potential of these capable men. Many communities, despairing at their inability to cope with the rapid movements of John Dillinger, Pretty Boy Floyd, Ma Barker and Vern Miller and others of their kind in that era, joined together in making plans to petition the Federal Communications Commission, for authority to initiate a network of this kind.

Responding favorably to their petition, the FCC authorized a number of Police Department Radio Divisions to start experimental tests by sending CW signals in the 2 to 8 megacycle bands.

At KGPE, Department of Police, Kansas City, Mo., the radio operators confronted the challenge with some misgivings. There was very little money on hand to purchase even the most elemental gear essential for the sential for the tests. Some of the Operators had only Radio-Telephone licenses and could not manually transmit the CW signals during their watch at the Police Radio Transmitter. So, after several false starts a practical method of doing this automatically was devised. Off duty operators had scrounged discarded equipment from local Broadcast stations which could be converted to this purpose during the experimental period.

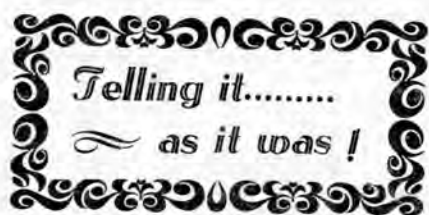
A standby Western Electric 9A transmitter was converted from A3 to A1 emission. An FB-7 National receiver was loaned by a local Ham for use in mon-

itoring transmissions from other cities participating in the tests. Hooked to a keying jack that had been added to the transmitter, was a haywire lashup consisting of a Broadcast Station transcription turntable, on which rotated a 16 inch disc whose edge had been notched to tap out a series of V's ending in KGPE the station's call letters. These notches tripped a switch plugged into the keying jack of the transmitter. As long as the turntable rotated the transmitter sent out the V's and Call Letters as a test signal.

Over a period of months, duty operators on each watch logged all test signals heard from other cities engaging in the tests. At the conclusion of the experimental period, all data was studied to determine if such a communication service was indeed feasible. Many city and state police officials followed this activity with great interest. Eventually the FCC granted approval and it was not long before a busy network of Police Radio Telegraph circuits was in operation.

As they always have in the past, these ex-sea going operators came through and established a professional radio telegraph network that transmitted Police Intelligence in a manner that compared favorably with similar Military and Commercial services. They handled 500 word Radiograms of fingerprint classification data, with its inner whirls and outer whorls with aplomb. Many of these wanted men were apprehended through the use of this method of Wireless. Of course there were problems. Operators were monitored by the FCC playing checkers and chess on many a dogwatch. Ambitious Chief Operators in one city trying to extend their authority over operators in another city because of loose net discipline. But, in spite of these and other handicaps, the Police Radio Telegraph Net helped bring about an organization known as APCO (Association of Police Communications Officers). What happened after I left for WWII in 1940 I have never had the opportunity to find out. Perhaps some other SOWP member can add a sequel to this story.

By H. T. HART 585 - V



WIX-MAN'S Episodes ala Bill Hannah

EPISODES IN THE LIFE OF A WIRELESS OPERATOR

by Wm. H. Hannah

EPISODE #1

S/S Duquesne KECS New Orleans to Liverpool/Manchester. Winter 1923. 2KW Navy Standard Spark. Young skipper, 28, I thought he was office boy!

Riff-raff crew, mostly I.W.W.'s, remember them? International Workers of the World, the forerunners of the Communists.

Food very bad--Dutch steward "knocking down" on food. Crew chased him up the dock in Liverpool, absent for three days till things calmed down. Crew came back from "liberty" first night - much banging on rails with pipes etc. and a few local fights. Two Liverpool "bobbies" of massive proportions came down on call and straightened the crew out. Dutch steward married English girl and proceeded to stow away his new brother-in-law on return trip. First detected by mysterious shadows in his room when steward was out. On pretense of need for carbon paper, noticed holes at bottom of steward's closet door, they were not for easy transit of roaches but air for stowaway.

Return trip - bad storm. My antenna blew down, developed leak in #1 hold, and turbine rotor lost some blades. Hove to for three days, raised heavy (tons) rotor housing with chain falls--chief crawled down inside and chipped equal number of vanes opp. side to balance--a HOT job even after housing cooled! Back on own power and turbine O.K. . . . msg to Shipping Board advised our action. They still didn't believe it when arrived N.O. Job would have taken weeks alongside the dock.

EPISODE #2

S/S Panama KMI NY Port au Prince and Cristobal, C.Z. Summer 1923. 1 KW Telefunken Spark. Old Telefunken Xtal recver, bellows type tuning coupler with beaded plug around periphery of secondary for large tuning increments. Also Grebe CR-7 receiver with tube type detector inset on face of panel. We used to scrounge VT-1's for this hot shot receiver.

Northbound - PauP to New York. Passenger, Cashier of Royal Bank of Canada in PauP. Msg. from NSC for Cashier "Please furnish vault combination, you forgot etc." Cashier to Sparks, "How do I know this to be authentic?" Sparks, "Ask for some identification data known only to you and bank." Amount of last bank draft on home bank identifies sender, so we sent combo over the air. Hope they got combination changed by the next day before someone crashed the bank. It was lucky we were almost within sight of PauP. Sometimes with local static we could have worked better via blinker!



EPISODE #3

S/S Byron D. Benson Tidewater Oil Tanker KWN 1924 NY-Gulf/SA oil ports

One of early RCA P-8 spark conversions to back to back self rectified 204A's Early RCA "relay stations" for gulf/carib area. These really "got out" - about 17 amps in antenna. Used to work WSA, WSC & WCC by the hour.

EPISODE #4

S/S Horace Luckenback KULK 1924 NY to Pedro, SF & Puget Snd lumber ports.

2KW Navy Standard. "Fire at Sea."

Off Gulf of Tehuantepec - 8-4 "black gang" member rudely shaken from dreams by putting bare foot into soft fudge of deck composition in room - deck very hot underneath! Fire in aft paint locker and had spread to #6 hold. Steam smothering system unable to cope - bored holes through steel deck for extra live steam hoses - still burning, and 200 containers of compressed ammonia (very explosive) in #5 hold - they got out on deck in hurry and under shade. Black gang lived under this awning till we got to Pedro. Finally after much deliberation opened up hatches and put out fire with water. Whew!





FOLKMAN 'GEMS

CONFUCIUS SAY . . . "One picture worth a thousand words". Ralph Folkman gives us even greater reward in recalling the nostalgic past in his sterling collection, drawn for members of the Society. They are a priceless heritage bringing memories of an era that is fast becoming history. Bill Breniman.



Folkman • WBAF

PASSENGER: "I UNDERSTAND WE GET OUR TIME FROM THE STARS."
 SPARKS: "TRUE, BUT PERSONALLY I FIND MY WRIST WATCH HANDIER!"



Folkman • WBAF

"MARY, GET THE WIRE CUTTERS FROM MY TOOLBOX... I WANT TO EXPLAIN THE FULL MEANING OF WIRELESS TO OUR SON."



FOLKMAN

GEE, MOM — LOOK WHAT I FOUND IN GRANDPA'S TRUNK UP IN THE ATTIC !



Folkman • WBAF

"I blame the ozone from the spark gap for those damn whoppin' appetites in the wireless shack."



Folkman • WBAF

SHIP'S CHAPLAIN:

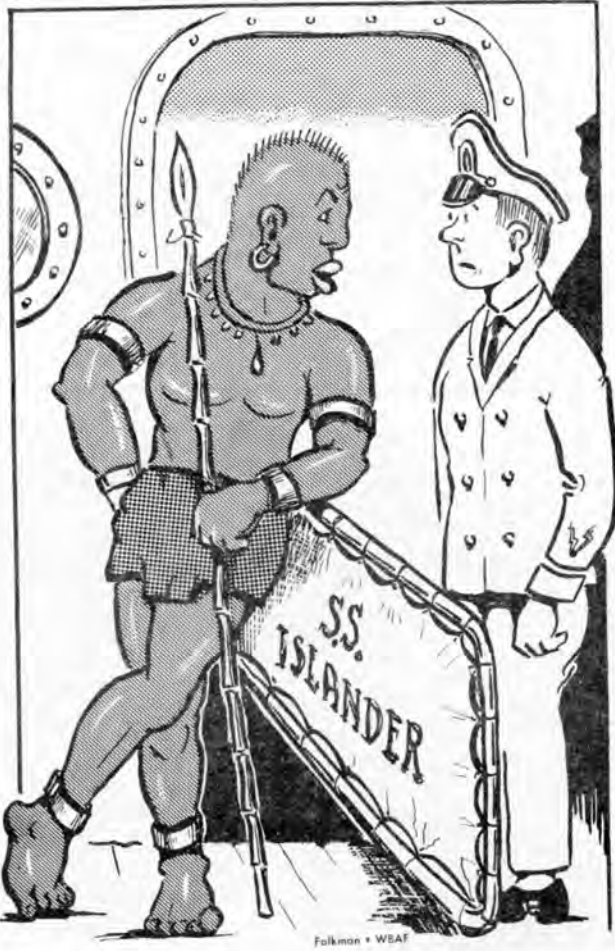
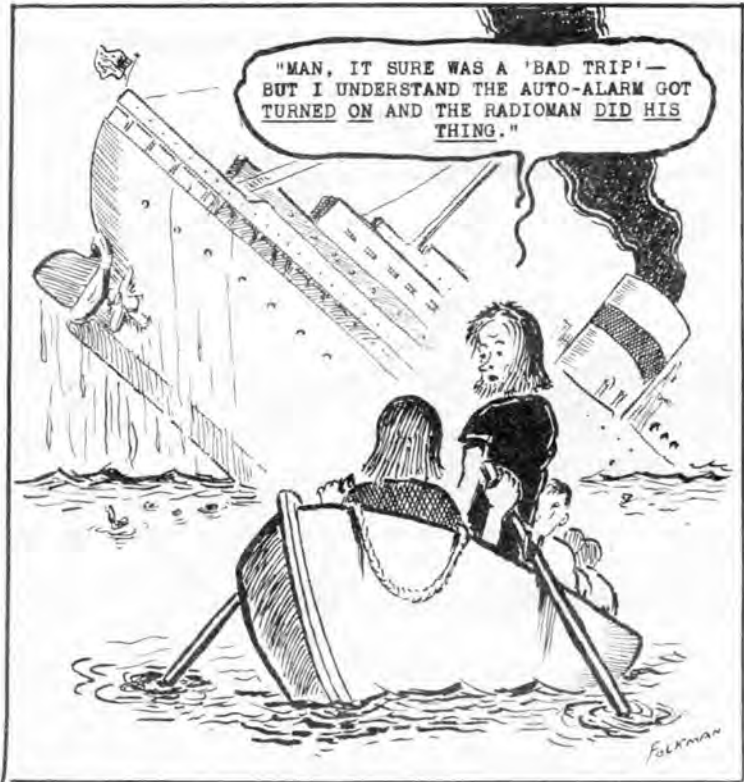
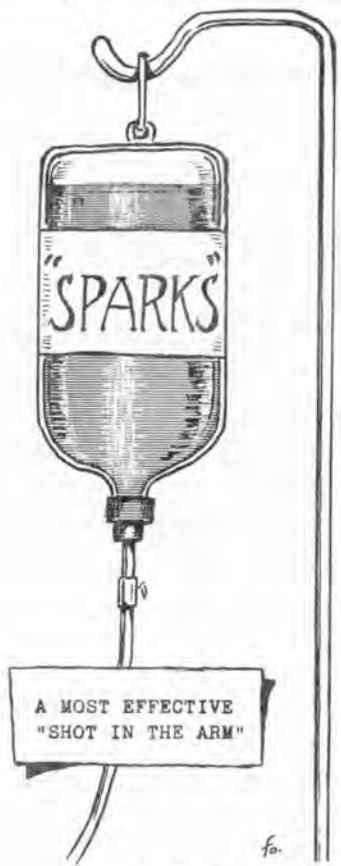
"WE THANK THEE FOR A SAFE VOYAGE.... AND OUR RADIO CREW THANKS THEE FOR A LETTETH UP OF STATIC AFTER A BAD PERIOD OF ATMOSPHERIC HADES."



Folkman • WBAF



Drawn by Ralph C. Folkman (WBAF) for SPARKS, PORTS O' CALL & S.W.P.



"SPEAKING OF MICRO WAVES, WE POUND KETTLE DRUMS TO CONTACT OTHER VILLAGES — WHEN THE SKIP IS RIGHT."



"CHIEF, DID YOU EVER GET CHEWED OUT FOR TESTING — LIKE WHEN THERE'S A DISTRESS ON THE AIR ? "

KQNI's Last Voyage



EPISODE

THE LAST VOYAGE OF THE SS WESTCHESTER/KQNI
(SOS/CQD CLUB ACCOUNT BY MEMBER JOHN F. PITZER)

Little did I suspect that I would be sending out the SOS when I signed articles on board the SS WESTCHESTER in Westwego, La., that warm clear summer day of mid-August, 1963. The WESTCHESTER was an old beat up Liberty ship built during the early part of WW2 and as I walked down the quayside looking at it, I said to myself it sure looks like it has seen better days but I needed the job having just left a shoreside job in Panama with All America Cable & Radio. The trip to India via Suez started out very calmly. After leaving the pilot off after clearing the Mississippi in the Gulf, we proceeded to Freeport in the Bahamas to top off the bunkers (fuel up).

We left Freeport the last week of August and settled down for the long trip to Suez. After clearing through Suez we anchored offshore in Djibutti which was previously an old French colony. Our troubles started three days after leaving the fueling port of Djibutti. I was laying awake in my bunk just prior to getting up for breakfast and then the first morning watch when I would open the ship's radio station at 0900.

I suddenly noticed a strange quiet which was so quiet you could almost hear it. Anyone having sailed on a Liberty knows what a racket the old 'up and downers' make. After a while I heard the anchor chain go down and knew that we had anchored and that something was up. I still had lights in my cabin so I knew we still had power. I went into the radio room and tested the equipment and found all in order and opened the station a little early to be ready for anything. After about an hour the skipper came in and had me send off a radiogram to WSL in Amagansett Li to our owners in New Orleans. We had sustained damage to the main engine due to metal fatigue and would not be able to continue under our own power. That night I received a message from WSL telling us arrangements had been made with the Smits' seagoing tug from the Persian Gulf to come down and give us a tow to Bombay.

The message gave us communication data, etc., so we would be ready for them. Our tow boat was the MV TASMAN ZEE PHWB. The next two days passed uneventfully. Several ships passed us and one large Russian combo freighter-passenger came close and asked us by blinker if we needed assistance, which we declined. The third day after anchoring I established contact with PHWB on 8 MIZ, and he advised us of his ETA our position for about 2½ days later. In the meantime I noticed the weather getting a little on the rough side and the clouds started piling up. By the following morning we had a full gale blowing with rough seas.

About mid morning the skipper came in and told me to keep alert as we were fully loaded with ten thousand tons of grain and fuel we had just taken on in Djibutti. We were anchored a short distance east of Kuri Island in the Indian Ocean. About noon one of the anchors broke its chain and we started drifting slowly towards the reefs and rocky shores of Kuri.

In the meantime the storm had worsened and we were so close to the rocky shore and reefs that everyone became alarmed.

The skipper gave orders for the emergency spare anchor to be rigged. This is a big job as the anchor must be hauled out of its storage space and moved forward to where it can be fastened to the bow anchor chain. Realizing the dangerous position we were in and the storm getting worse all the time, by this time the wind was almost hurricane force with mountainous seas forcing us towards the rocks and certain doom with the ten thousand tons of grain on board we would have had it if we grounded on the rocks. The skipper sent word to me by way of the second mate to send out the SOS call for assistance. Lucky we still had full power from the engine room and early in the afternoon I sent out the International automatic alarm signal for one minute and then the SOSSOSSOS DE KQNI KQNI KQNI.

We were answered immediately by an English passenger ship who was only about 4 hours steaming time from us. He arrived late that afternoon just about sundown and in the meantime the crew showing expert seamanship under direction of first mate John Clark and boatswain Boland managed to rig the emergency anchor. This, together with the weather starting to slacken, stabilized our position less than 75 yards from the reefs and rocky shores of Kuri Island.

We could see many man eating sharks all around us in the water all during these past days and did not like to think of swimming in those waters. The English passenger ship anchored about a half mile from us and refused to come in any closer due to consideration of his passengers. However, he did inform me he would stand by until the TASMAN ZEE arrived. About midnight the TASMAN ZEE arrived and we managed to get a line aboard her and the long tow to Bombay began. Arriving in Bombay 12 days later we all had quite a celebration at the Seaman's Club in town. After trying unsuccessfully to repair the damaged engine, the old rust bucket was sold for scrap in Bombay harbour and we flew back to the States via All Italia Airlines.

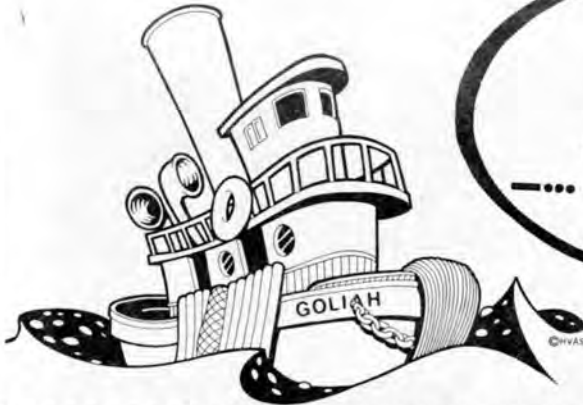
I can't remember the exact date of the SOS but it was the last week of September 1963. QNI was 75 yards east of Kuri Island in the Indian Ocean.

John F. Pitzer 1358-PA

EPISODES & EXPERIENCES

ALASKA WHALING

(*)



Gffshore whaling today is largely the province of the Japanese, Russians and some daring Azores islanders. But time was when offshore whaling was big business in Alaska. That era was seen at first hand by a young radio operator named Dexter S. Bartlett, today of Portland, Ore., who was assigned to a big seagoing tug, the Goliah (which sounds like a seaman's misspelling of Goliath, but no matter).

The Goliah's job was to tow cut-down hulks stuffed with supplies for the offshore whaling station at Akutan. Goliah towed the Fresno; another hulk used in the same service was Donald McKay's last clipper, Glory of the Seas.

(Glory of the Seas is the subject of a book from Mystic Seaport-Wesleyan University Press; tragically, she might have been preserved for us today had any well-wisher come forward to purchase her hull in the early 1920s. No one did and she was burned on a Washington State beach.)

The Goliah took the Inside Passage on her way north while Bartlett and the crew discovered their so-called cook was an ex-blacksmith's helper whose notion of keeping pots on the stove in stormy weather was to make a flour-and-water paste and try to glue them on the griddle. A change was made, but his

successor had trouble cooking a Thanksgiving turkey which the ship's heaving regularly tossed into the coal bin or the garbage can.

Bartlett and his cohorts had no trouble in learning when Akutan was near; the station had been closed most of the winter, but the odor lingered for miles downwind. They found the whaling station cheek-by-jowl with a grimy Aleut village whose inhabitants, in 1917, were still living Stone Age style apart from kerosene lamps and a few tools.

Like most Aleut islands, Akutan would not be deemed a garden spot. It was barren save for coarse grass and blueberry bushes, earthquake-prone and equipped with a hot spring that let more intrepid anglers cook their trout a few feet from where they caught it.

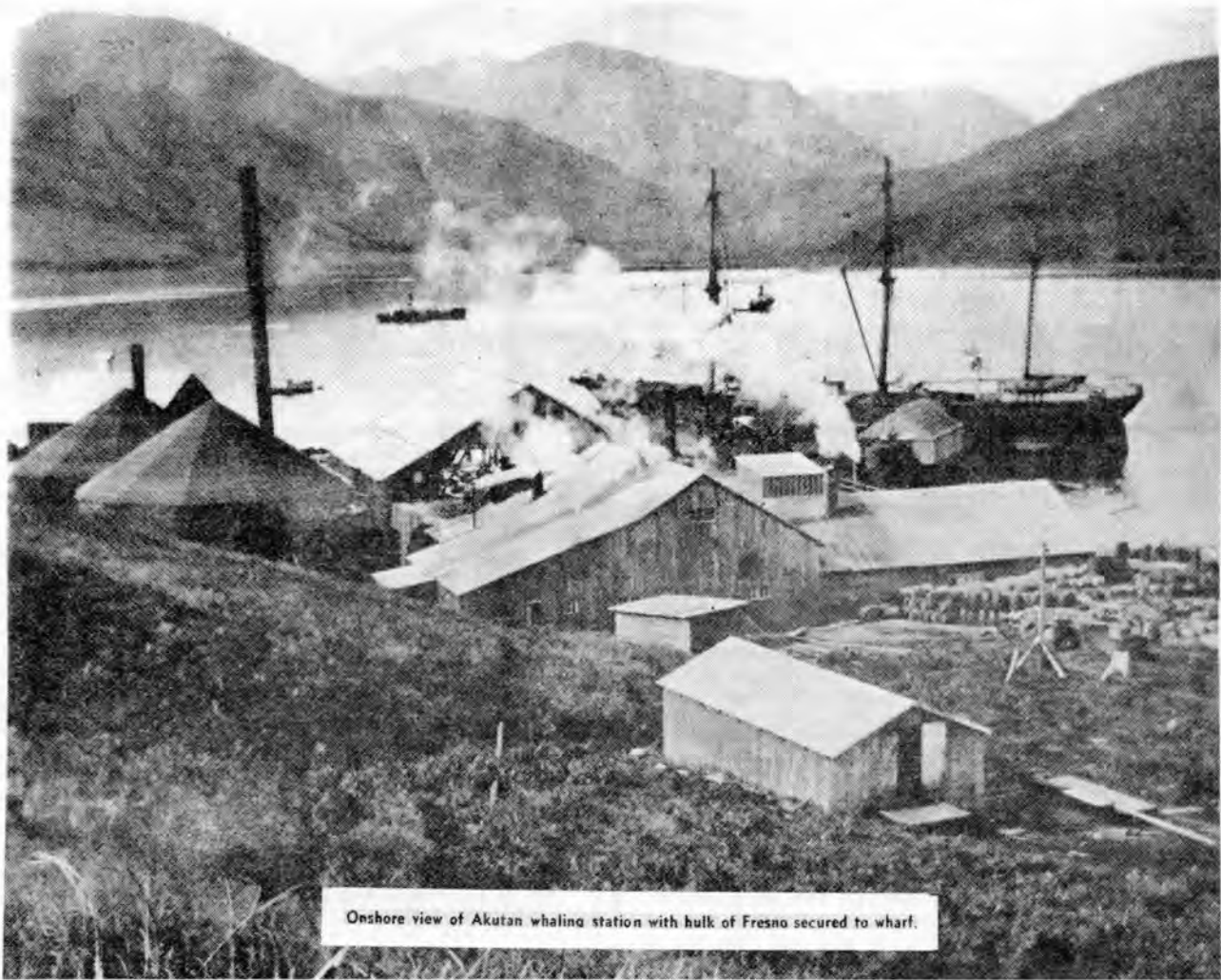
Life ashore could be dangerous. Bartlett's tug, Goliah, was berthed ahead of a killer boat one July 4 when a friendly dog's wagging tail brushed the lanyard of a harpoon gun. The bomb-laden harpoon whistled past Goliah's pilot house and exploded. There were no casualties because all hands were ashore marking the Glorious Fourth . . . which acquired a new realism when the harpoon bomb blew up. The dog disappeared permanently.

(Continued on Page 92)

(*) By - Dexter S. Bartlett



The Goliah towing the barge Fresno loaded with the crew and supplies for the Akutan whaling station. The Fresno was another ancient clipper ship demoted in her old age.



Onshore view of Akutan whaling station with hulk of Fresno secured to wharf.

The killer boats, for no discernible reason, were registered out of St. Paul, Minn. Blues, finbacks and sperm whales were their chief prey, Bartlett discovered. Once harpooned, the whales were pumped full of air, marked with a flag and left to float while the killer boat went on in search of more prey. When the day ended, the boats towed their giant catch to shore where the whales were dragged up a sloping ramp and dismantled by Aleut workers.

The blubber was used for fertilizer once its oil had been rendered while the Aleuts carved sperm whale teeth into sundry artistic items of Arctic scrimshaw.

Not a man to miss opportunities, Bartlett had taken a Brownie camera with him. The photos he made more than 50 years ago today constitute a unique and no-longer-to-be-duplicated record of offshore Alaska whaling. With his permission, some of them are published today.

Alaska Whaling



This was Ketchikan, Alaska, salmon capital, as photographed by Mr. Bartlett in 1916. Photo was taken in a heavy snowstorm, but his Brownie was so slow the flakes failed to hinder the view.

The foregoing article, written by Society Historian, DEXTER S. BARTLETT was published many years ago by the Sunday Standard Times. Photographs were from "Old Bart's" Brownie. The Sea-going Tug Goliah and sister-ship Hercules were the most powerful tugs in the Pacific in 1917.

ON RECEIVING PRESS PX

Receiving press is a delicate operation. For instance, you must not slumber while it is being transmitted, else the "Ocean Times" will not, on the morrow, be able to go to press, or if it does, it will contain large vacant areas, as if the Censor had been at work. Providing always that the musical signals do not lull you to sleep, it is not a very difficult task if you can see the transmitting station's aerial through the porthole.

Some authors aver that they find inspiration to come more freely when there is much noise going on around them. Noise, too, is liable to make the "Ocean Times" more spicy. One is in the middle of an important item and the foghorn goes at a critical point. "Count Baltic, Prime Minister of Ruritania, was yesterday a -----." The dash represents the foghorn, and it is a toss up whether we shall, in tomorrow's issue, assassinate the Count or appoint him Secretary to the Executive of the League of Nations.

But too much noise can be fatal. Arlington has just begun to get into his stride and you are congratulating yourself on readable, albeit weak, signals. Just at this point you are nearly deafened by a station, apparently right alongside, starting up with about two score of preliminaries. Then the following is transmitted six times at about ten words a minute with only some fifty erasures: "QRA steamship with two stacks and four sticks bound east?" You happen to be the unhappy ship with two stacks and four sticks, and it is with humility you realize that the transmitting operator has not a great opinion of your qualities as an operator, since when only a few yards away he uses full power (which you judge to be about ten kilowatts), sends at his slowest speed and repeats till you wish the war wasn't over and there were still such things as torpedoes. When finally he finishes you send him an A requesting him to stand by. He responds: "Orders is orders when received from the Old Man." You retire at length from the unequal contest beaten at all points, and it is with sadness that you realize that Arlington has finished.

Some operators have performed marvelous feats in the way of receiving press. It is even stated that one night Poldhu's entire programme was duly received, each saloon passenger finding the "Ocean Times" next morning on his breakfast table. Yet it appears that on the particular night in question Poldhu had broken down and transmission of press was not effected. A distinguished novelist has alleged that when we are able to fly freely to the uttermost stars we shall be able to fly back into the past and see, for instance, the spacious times of Queen Bess mirrored before our astonished eyes. It may be surmised that our operator was able to reverse the process, thereby taking tomorrow night's press. Pass the salt!

--THE AERIAL - 1921

INVITATION If you enjoy the "EPISODES & EXPERIENCES" in this Volume of "SPARKS", why not write up your own stories and send them in for publication. Please furnish data and details, pictures if possible. Lets capture all those nostalgic experiences before they slip away. We believe the "E & E" Chapter will be among our best efforts. WAB.

BQ'S BY 'BART'

In sailing through the 61 mile Kiel Canal, a short cut through Germany from the North Sea to the Baltic, there are places where you can stand on deck and look down on cattle grazing in luxuriant pasturage.

* * *

In May 1926 Amundson, Nobile, Ellsworth and crew made the first flight across the North Pole in a dirigible. Everything went smoothly until they came iced down over Alaska, causing the airship to nose down. They were extremely fortunate in being able to balloon it down to Teller, and we brought them to Nome on the SS VICTORIA. There Amundson filed a 2,000 word message in Norwegian to the King of Norway at the Nome Army wireless station WVG. Then in walked Nobile with a 3,000 word message in Italian to Mussolini, of course both hard to handle. After the operator got those checked in walked the correspondent with a 30,000 word press message. The harried operators had to send all of it with a heavy, unwieldy key and Fairbanks WVB had to copy it all from Nome's wobbly arc. But, they got the stuff down through wire and ancient cable to a wildly expectant world in short order. It would have been a big job even for the Federal and RCA nets.

* * *

In 1797 Captain Truxton, of the U.S. Navy, devised the first flag communication system and in 1872 the International Flag Code was adopted. In 1877 came code light blinkers.

* * *

Via shaft-alley wireless comes a story that could be true. During one of those violent tropical thunder storms a radio operator was sitting at his desk with antenna ungrounded. A lightning stroke hit and he went out on deck through a closed door opening inward. His only damage was having his hair singed off where the headband had been.

Dedicated - to the men who "went down to the sea in ships" as Wireless Telegraphers - and all those who have earned their living "Pounding-brass" as Wireless or Radio Officers since the Days of Marconi.



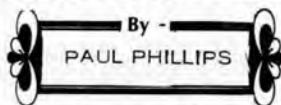
Bodie Island Light



Photo by Jim Page

Lighthouses of the 'Outer Banks'

◆◆◆◆◆ Colorful North Carolina Coast



Gale winds sang a song of impending disaster.

Only a flicker of hope—beamed from one of North Carolina's lighthouses—lay in the darkness for the vessel tossing on a madman's sea.

Decades have passed since the "wickies," men who manned the lonely outposts, fired the beacons to warn of treacherous shallows. Now, automation and electricity, modern transplants to keep an old body alive, fuse the space age with man's continuing struggle against the sea.

Only six remain today as silent guardians of such shoals as Diamond and Frying Pan. Their piercing lamps send out warnings by night and provide unique charm for travelers by day.

North Carolina's lighthouses hold unique distinctions in the service of man. One is the tallest in America, another has been in continuous service for 147 years, and "the baby" of the group is the brightest of them all.

North to south, the lighthouses are: Currituck Beach, Bodie Island, Cape Hatteras, Ocracoke, Cape Lookout and Oak Island.

Currituck Beach Light has often been called Whaleshead Light. Located at Currituck Beach or Corolla, it is of red brick and stands some 158 feet tall. It was completed in 1875. The name Whaleshead is said to come from the appearance of sand dunes in long, low ridges like swimming whales.

It was near Currituck that the wreck of the steamer "Metropolis" occurred in the winter of 1878 with the loss of nearly a hundred lives.

Bodie Island Lighthouse, which went into operation in 1872, stands well back from the ocean near the entrance to the Cape Hatteras National Seashore.

When the light was built it was located near the shore on the north side of Oregon Inlet. Since that time the inlet has moved steadily southward and away from the light until today it stands nearly two miles north of the Inlet.

While the present lighthouse, between Nags Head and Oregon Inlet, was under construction, five ships wrecked near it. Prior to electrification, Bodie Island light was a stationary one, a five-wick oil lamp, which was trimmed and filled each night in preparation for the night watch.

(Continued on Page 96)

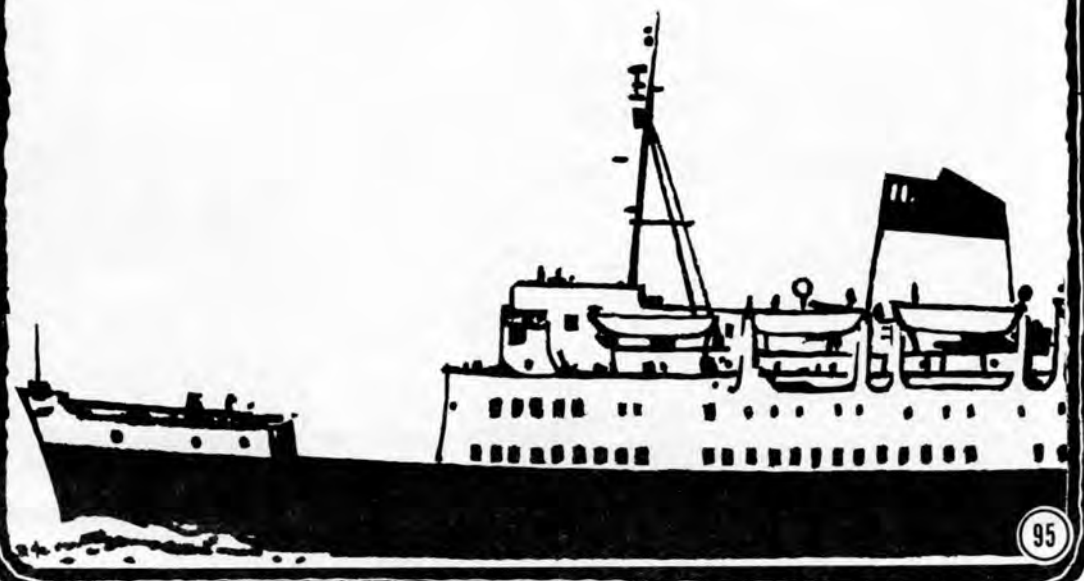




Section Four



The
Nautical
Journal



HISTORICAL LIGHTHOUSES

Cape Hatteras Lighthouse, 208 feet high from foundation base to roof peak, is not only America's tallest lighthouse but one of the most visited and photographed. Through cooperative arrangement between the National Park Service and the U.S. Coast Guard (which operates all lighthouses) it is open to visitors. Hatteras, sentry over Diamond Shoals, ironically is painted with barber-pole striping of black and white. Through what is said to be a mix-up of orders, painters entrusted the diamond design to the Cape Lookout Lighthouse.

The first light flashed from Hatteras on December 16, 1870. The structure is located on the tip of Cape Hatteras where Diamond Shoals extends into the ocean. Here the warm waters of the Gulf Stream collide with the chilly seas of the Labrador Current. These shoals--Diamond--and the death of some 2,264 ships, have earned the reputation of "Graveyard of the Atlantic."

South of Hatteras, Ocracoke Island is the home of North Carolina's oldest lighthouse still on active duty. It is also one of the oldest in the United States. Built in 1823, Ocracoke Lighthouse is 76 feet high. Its white beam is visible for 14 miles. The structure was built on two acres of land sold to the United States for \$50.00 on December 5, 1822.

Cape Lookout Lighthouse on Core Banks is a 160-foot high brick tower completed in 1859. It was first lighted on November 1, 1859. During the Civil War, in 1862, "rebels" damaged the lens which prompted its removal. However, by 1865, the light was back in service again. Cape Lookout is still only accessible by boat or airplane.

Oak Island Lighthouse is the brightest in America. The youngster of the Tar Heel lights first sent out its guidance on May 15, 1958. It was the first light constructed in the 5th Coast Guard District since 1903, the year the Wright Brothers made their famed flight. The light, located at Caswell Beach just across from Southport, is thought to be the first built with aircraft assistance. Its beacon flashes some 20,000,000 candlepower from a lamp house installed on the 165-foot concrete tower.

The Oak Island Light replaced Cape Fear Lighthouse, which was located a few miles away on the tip of Smith Island. Cape Fear, a steel skeleton tower, was built in 1903 to mark the entrance to the Cape Fear River and warn of Frying Pan Shoals. Also on Smith is Baldhead Light, constructed in 1806 and discontinued in 1935. "Old Baldy" is still a famous landmark. Little remains today of Cape Fear light.

At Hatteras and Bodie Island, buildings which formerly housed lighthouse personnel have been refurbished as National Park Service museums. Both are open free to the public.

Each lighthouse has its own distinctive method of flashing its caution. And those who sail the seas know well their alarm. The modern mariner relies now on radar, radio compass and direction finder, as well as instantaneous ship-to-shore communications. But still there is something assuring, comforting about that beam of warning from the "silent six"--North Carolina's lighthouses.

Cape Hatteras Light





Sea stories we loved

By Ora Dodd

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How powerful a magnet is the sea! Those who grow up near it can never feel at home inland, and some deep instinct lures even landmen to its shores.

We are drawn to the sea, and yet there is awe and fear in the attraction, too; we sense our

smallness and helplessness compared to the vast waters. We cannot forget the sailors' descriptions: "the savage sea," "the cruel sea," "the monstrous sea."

As the sea itself attracts, so do sea tales. The best of them are immortal; even lesser ones live

long past their time. With "Odyssey," man began to write down his sea stories in the 800s B.C. — but he must have been telling them since he first ventured upon unknown waters as early as 7500 B.C.

So all of us, through books, can be sailors. In childhood, we are shipwrecked with Robinson Crusoe and the Swiss Family Robinson; Sinbad the Sailor is our crony; we descend to the ocean's depths and the coral and amber palace of the Little Mermaid.

As adults, we become absorbed in the tales of Joseph Conrad, Jules Verne, Rudyard Kipling, James Fenimore Cooper, Frederick Marryat, Herman Melville, H. M. Tomlinson, C. S. Forester — to name only a few who have written about the sea. Authors like Rafael Sabatini and Van Wyck Mason provide romance; there are the comic sagas, too — remember Glencannon and Tugboat Annie?

Let us glance back at some favorites — sea stories we may have read years ago, perhaps reread last week.

For many, the first "grown-up" sea book was Jules Verne's "Twenty Thousand Leagues Under the Sea" (that's 20,000 leagues across and below the surface of the ocean, *not* downward!). A forerunner of science fiction, the book has drawn readers since it was first published in 1869.

Captain Nemo still holds our interest — and even in today's technologically sophisticated world, inventors have yet to catch up with the marvels of his ship, the Nautilus. Think of Verne's imagination! He wrote at least 30 years before the first workable submarine and when electricity was still an experiment. Yet he describes an elaborate undersea craft with an electric plant supplying light, heat and comfort.

To fantastic imagination — and ample melodrama — Verne adds a touch of realism with exact dates and names of actual cities and ships. The story begins as Professor Arronax of Paris and his loyal servant, Conseil, set off in a United States research vessel to seek the mysterious sea

monster that has been ramming and destroying ships.

They find the monster — indeed, it sinks *their* ship — and discover that it's made of steel. They cling to the top of this "sort of submarine boat" until they are taken inside by eight masked men and become Captain Nemo's well-treated prisoners. They roam the seas and explore underwater with him, watching in horror as he sinks more ships. In the end, it is chance — entering a maelstrom off Norway — that makes their longed-for escape possible.

Or *was* it by chance the Nautilus was caught in the maelstrom? And what became of Captain Nemo, that unhappy man? Verne's first readers were so agitated that he had to explain everything a year later in "The Mysterious Island."

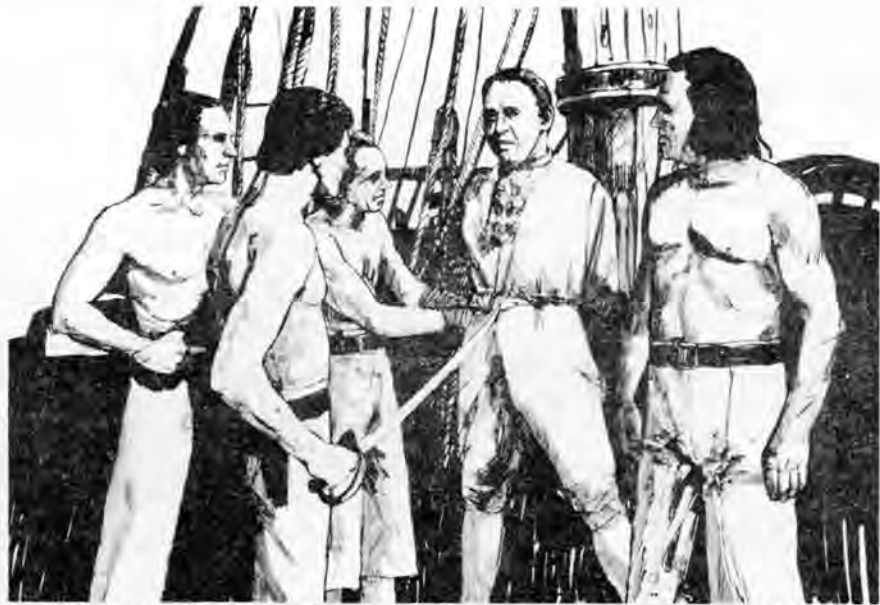
There is no fantasy about Richard Henry Dana's "Two Years Before the Mast" — only the grim reality of a common sailor's life on a merchant ship of the 1830s.

Dana kept a journal of his months aboard the brig *Pilgrim*, sailing from Boston to the coast of Spanish California to buy hides, and of his return on the *Alert*. He lived under the abominable shipboard conditions, put up with a cantankerous captain; watched unjust, brutal floggings.

Still, the 18-year-old Harvard student had signed up for the voyage because of ill health and trouble with his eyes. He returned to Boston two years later well, bronzed and strong.

Dana knew the harshness and frustration of a sailor's life; in 1840, he published "Two Years Before the Mast" so that others also would become aware of the seaman's lot. But the book is an adventure, not a sermon. It became an immense success and has been in print ever since.

Dana did not forget his sailor friends; when he entered law practice, he often served as counsel for ordinary seamen. "His office," writes biographer Charles Francis Adams, "was apt to be crowded with unkempt, roughly dressed seamen, and it smelled much like a forecabin."



The dispute over Captain Bligh will probably never be settled. Was he

a sadist who deserved his fate or was Christian's mutiny unwarranted?

At least one biographer suspects that reading "Two Years Before the Mast" was "just the fillip" Herman Melville needed to decide on a jaunt to the South Seas. In 1841, the 21-year-old scion of a good New York family shipped on the whaler *Acushnet* from New Bedford, Mass.; 10 years later, he finished "Moby Dick," that great and unclassifiable novel of the sea, of whaling, of man's nature and desires.

The story of ruthless Captain Ahab and his vengeful pursuit of the white whale is adventure, epic, poetry, pedantry, philosophy and symbolism intricately interwoven through more than 800 pages. "Moby Dick" was rejected, even despised by 19th century readers; the 20th century has elevated it to a place among the world's great novels. Modern critics have called it "Beethoven's Eroica in words."

From the first sentence — "Call me Ishmael" — its beginning chapters are vividly real: the bitter cold; the dark, dirty New Bedford tavern; the appearance of Queequeg the savage as Ishmael's roommate. There are passages of natural history, of soliloquies, of Shakespearean speech. "Moby Dick" is more than an exciting sea tale of adventure and tragedy — it is an overpowering book.

Readers of sea stories need not be experts on the sea and its terms. As Dana points out, "Customs and habits of life new to us . . . act upon the inexperienced

through the imagination, so that we are hardly aware of our want of technical knowledge." We can follow "minute nautical maneuvers with breathless interest, who do not know the name of a rope in the ship."

This is never truer than in the stirring adventures of Captain Horatio Hornblower, as he fights for England in the Napoleonic Wars and advances through the years from midshipman to Sea Lord of the Admiralty. We who have followed C. S. Forester's hero through 11 novels have fought some exciting sea battles with this proud, reserved, self-critical yet very likable man since he first appeared in 1937.

No symbolism in Hornblower's life! It is packed with action and danger and escape as he sails the Caribbean, the Mediterranean and the Baltic. We emerge from Hornblower stories, one critic says, "almost drunk with the wind, the sea, the noise of cannonading, the heady wine of hero-

continued

SPECIAL NOTE

"Sea Stories We Loved" is reprinted with permission from Modern Maturity. Copyright 1974 by the American Association of Retired Persons. . . This appeared in the April-May 1974 issue. Miss Ora Dodd, Author, hopes our members will enjoy reading her story.

ism." And even if we cannot explain "Sheet home the missen tops!" or a hundred other orders, it's clear to us how the battle goes.

Many sea tales are told by men who have lived them; some, like Forester's, are based on years of loving research. But one story has been told in so many versions, and so hotly disputed, that even armchair sailors take up the debate.

It's a true story. HMS *Bounty* sailed from England in 1787, bound for Tahiti, with Lieutenant William Bligh as captain. Before the return trip two years later, some of the crew — led by first mate Fletcher Christian — mutinied.

Was Captain Bligh a cruel, sadistic tyrant who deserved to be put into an open longboat with 19 men who were loyal to him, and abandoned in the Pacific almost certainly to perish? Was Mr. Christian a noble and resolute leader forced by injustice into his act? Or was Bligh a good officer, a maligned man, and Christian an almost-deranged mutineer? The dramatic question will never be settled.

Many of us base our judgments on the most popular American account of the adventure, "Mutiny on the *Bounty*," published in 1932 by Charles Nordhoff and James Hall. This version is told by a fictional midshipman, Roger Byam, of the *Bounty* — but is based on Admiralty records and court martial transcriptions.

Instead of perishing at sea, of course, Bligh and his men managed, by a miracle of seamanship, to reach a Dutch settlement then return to England and report the uprising. Some of the mutineers were tracked down and taken back to face charges. Nordhoff and Hall completed the story with two later books: "Men Against the Sea" on Bligh's arduous longboat voyage, and "Pitcairn's Island" on the mutineers who escaped.

One writer's name is forever connected with the sea. Joseph Conrad was born in 1857 in Poland and ran away to sea at 15. He was brought home by his tutor, but at 17 sailed as a fo'c's'le

hand and for the next 15 years was always aboard some kind of ship, ultimately rising to his own command.

His first voyage to Great Britain changed his life, for he made England his home, learned and began to write in its language. In this second tongue, he wrote some of the great sea classics, including "Youth" and "The Nigger of the *Narcissus*."

One especially memorable Conrad tale is "Typhoon." Captain MacWhirr of the steamer *Nan-Shan* is the hero — if such an "ordinary, unruffled" man can be a hero. His stolid, obstinate personality is the bane of his young chief mate.

Captain MacWhirr has had a fairly placid life at sea; he has been wet, tired and uncomfortable, but he has "never been given a glimpse of immeasurable strength and immoderate wrath — the wrath and fury of the passionate sea." Now he is about to meet that kind of sea as the *Nan-Shan* steams toward the port of Fu-Chau.

"There's some dirty weather knocking about," MacWhirr admits, watching the steady fall of the barometer. He says it calmly; no one can imagine a typhoon who has not met one. But the *Nan-Shan* is about to be put to the test in a period of darkness and terror.

Afterwards, when the ship finally comes into port, "she seemed to have served as a target for the secondary batteries of a whole fleet . . . Broken, torn and devastated . . . she was encrusted and gray with salt to the trucks



To Hemingway's *Old Man*, the sea was a woman he was in love with.

of her masts and to the top of her funnel." But she has come to anchor with no man lost, and Captain MacWhirr is as terse and phlegmatic as before.

As for readers, our visages may not have altered like the *Nan-Shan's*, but we have a strong feeling that we, too, have been through some spine-tingling "dirty weather."

Old Santiago of Ernest Hemingway's classic "The Old Man and the Sea" always thought of the sea as *la mar*, "which is what people call her in Spanish when they love her . . . Some of the younger fishermen . . . spoke of her as *el mar*, which is masculine. They spoke of her as a contestant or a place or even an enemy. But the old man always thought of her as feminine . . . and if she did wild or wicked things it was because she could not help them."

Santiago, whose story was published in *Life* and in book form in 1952, is old and poor — and he has gone 84 days without taking a fish. Then one morning he goes out into the Gulf Stream and hooks a great fish, so powerful that it tows the small boat for hours through the night and on into the day.

The old man grows cold and one hand is numb, but he can only follow the fish — the biggest fish he has ever heard of. Three sunrises later, the fish begins to circle and jump and the battle begins. At last, Santiago harpoons the fish and lashes it to his boat. "He is my fortune," he thinks.

As he struggles to reach home port, sharks come and tear away at the great fish; when he finally ties up his boat, nothing is left but the head and tail and the long skeleton between. Santiago falls into bed, almost done for. But the skeleton is there, with his boat, to prove that the old man fought and caught a great fish.

Both Atlantic and Pacific were battlegrounds from 1939 to 1945, and two World War II novels published in 1950 make exceptionally exciting reading.

A sea-scarred, down-at-heels minesweeper is the heart of Herman Wouk's "The *Caine Mutiny*." Another mutiny in the Pacific? Yes, only this purely fictional

one takes place not among down-trodden 19th-century seamen, but among cynical, "we've-seen-everything" personnel who follow as few Navy regulations as possible but get the job done.

When Lieutenant Commander Queeg comes aboard as the USS *Caine's* new captain, the action becomes even crazier—but in another way. Queeg is a martinet; a petty, insecure tyrant whose officers refer to his worst moods as "Condition Bligh."

These are sailors—albeit mostly reservists—and "The *Caine Mutiny*" is a sea story; but the Pacific is little more than backdrop until late in the book. The drama aboard the *Caine* is in the conflicts of its ill-assorted officers and men.

Then the ship steams into a typhoon. In spite of being a "gray old bantam," the *Caine* is "bustling with strength for emergencies, and equal to a gale force." But strange things happen in a freak show like a typhoon. While the *Caine* is struggling for her life, a storm is whirling on the bridge, as well: Captain Queeg has finally caved in and is about to lose the ship. To save it, honest Maryk, the executive officer, goes through the Navy formality of announcing that he is relieving Queeg.

This is the mutiny; it ends, as the *Bounty* mutiny did, with a court martial.

"The Cruel Sea"! Nicholas Monsarrat burned that phrase deep into our consciousness with his novel of North Atlantic convoy duty during World War II. His stirring book, written with passionate feeling, plunges the reader into a bitter cold, wet, dangerous world. With Sub-Lieutenant Lockhart (Monsarrat), we stand watch-on-watch—four hours on the open bridge, four hours off—aboard the British corvette *Compass Rose*. Lockhart and his captain, Lieutenant Commander Ericson, are only two of the 150 sailors whose stories are told against the flaming curtain of war at sea. There are at least 150 women who wait—or do not wait—for these men, but they are remote. "The only heroines involved are the ships, and the



A storm at sea, and on the bridge of his ship, puts Capt. Queeg on trial.

only villain the cruel sea itself."

There actually was an HMS *Compass Rose* (her real name was *Campanula*), and like all corvettes, she "would roll on wet grass." Everything about her—and the later *Saltash*—is real and painful. We endure a watch with a man numb with fatigue; he is dressed warmly, but in North Atlantic weather, "great icy dollops of salt water found their way everywhere: down the neck, in the wrists, into the trouser-legs and sea-boots." And every convoy means enemy submarines and the fiery death of one or more ships.

Six years after the war, every moment of Monsarrat's ordeal came surging into his book: "The scene from the bridge . . . showed . . . tormented water, with huge waves flooding in like mountains; with a haze of spray and spume scudding across it continually; with gulfs opening before the ship as if the whole ocean were avid to swallow her . . . The mast plunged and rocked through a wild arc of space . . . Night added the terrible unknown."

We have one more compelling sea tale to add to our collection.

Six daring young men set out to sail across the Pacific, from Peru to Polynesia, in 1947. When they returned, most of the world wanted to read their story as told by their leader. Thor Heyerdahl's

1950 "*Kon-Tiki*" has been translated into 24 languages.

What a unique voyage it was! The "ship," *Kon-Tiki*, was a large raft of balsa logs with an orange sail. Heyerdahl, an ethnologist, wanted to test his theory that Indians from South America could have sailed such a raft to Polynesia in about A.D. 1100; such a migration would account for some Polynesian traditions and culture. After service with Free Norway forces during World War II, he found sponsors for his expedition and five stouthearted men with scientific interests to join him.

When we finish reading "*Kon-Tiki*," we feel saturated with sea air and spray, for we have bobbed up and down with the rolling swells for 4,300 miles of open ocean. The raft lies so low in the water that it is like a huge balsa fish—one more denizen of the Pacific, almost kindred to the dolphins, tuna, pilot fish and sharks that swim up to the raft, and sometimes onto it.

And we feel the isolation. Not once does the *Kon-Tiki* sight another vessel, for it is following the Humboldt Current, away from ship lanes. "The whole sea was ours," writes Heyerdahl. But their landfall at last is thrilling when, after 101 days aboard the raft, they reach the atoll of Raroia in the Tuamotus.

Every ship should find such a welcoming port! Led by their chiefs, the 127 islanders prepare a great feast in honor of the *Kon-Tiki*. They hear the story of the amazing voyage, then dance and sing for their guests through most of the night.

Kon-Tiki's flower-wreathed men are persuaded to join the dancers; the chief laughs so much he falls off his seat; the musicians are helpless with mirth. And when at last Heyerdahl and his companions sail away, the village weeps.

Have all the great sea stories been told? No—for though man invents new ships and new devices to protect himself, he does not really diminish the great challenge of the sea. It is always there—beckoning him to adventure. □

'The most important ship in the history of Canada's West Coast.'

Derek Pethick in 'S.S. Beaver:
The ship that saved the West,' 1970



'In all histories of the Province of British Columbia the name Beaver must ever stand as a glittering jewel.'

Charles McCain in 'History of the Hudson Bay Co.'s SS Beaver,' 1894

'S.S. BEAVER'

For over fifty years she plied the waters of the West Coast

BY ROGER TOUCHIE

In 1835 the Hudson's Bay Company was at the summit of influence within the British Empire and there was deep interest amongst Londoners in their latest venture—to send a steamer to the Northwest Coast of America. Curious throngs watched the launching of the sturdy, 109-foot craft at Blackwell on May 2 and one month later, with all fittings in place, they hailed the success of her first trial cruise. The vessel had been christened 'S.S. Beaver' and she would answer many demands in the fur land of New Caledonia, later to be called British Columbia.

On August 27, 1835, with engines and paddlewheels dismantled, the Beaver left Gravesend in the company of the 310-ton barque, Columbia. Their voyage was to take them south by southwest, across the angry Atlantic and through the treacherous waters near Cape Horn. By early February, 1836, the two vessels bobbed peacefully in the harbor of Honolulu. Refreshed and well-rested, the crews of the Beaver and Columbia started the final leg of their journey on February 24th. By mid-April, Captain Home of the Beaver and Captain Darby of the escort ship had anchored in the Columbia River at Fort Vancouver and been heartily received by Chief Factor Finlayson.

Soon the Beaver was refitted and she became the focus of local interest as her worthiness was tested in the Columbia. She was pronounced fit and ready for service—how long and well she would serve!

In the previous decade the Hudson's Bay Company had expanded to the West Coast. Due mainly to the visions and energies of Governor George Simpson, Fort Vancouver, in 1825, and Fort Langley, in 1827, had been established. Sailing ships were inefficient for extensive use in the coastal waters and Simpson foresaw many advantages in employing a paddlewheeler. The Beaver supplied the answer to one of the Governor's most pressing concerns. The competition from independent American fur traders was increasing and they were intercepting Indians with their fur loads before they reached the HBC fort. The Beaver became a flexible, 'mobile fort' for fur trading all along the coast and the American competition was quashed.

One historian has gone so far as to claim the Beaver as his 'savior of the Canadian West.' By concluding that the Beaver was the major factor in establish-

ing HBC dominance of the Canadian West Coast, Derek Pethick argues that without that strong British influence New Caledonia would have become a part of the Oregon Territory to the south.

In retrospect the Beaver deserves such accolades but in its day the ship was judged only on its merits as a fur cargo and supply ship. And not all supported the Beaver. Dr. McLoughlin condemned the Beaver as a money loser and continually pointed out inefficiencies to his superior, Governor Simpson. Time and again, however, the missions of the Beaver became the forerunner to progressive commitments by the Hudson's Bay Company.

The first coal deposits of Fort Rupert were claimed on a Beaver expedition. The harbors of Victoria and Esquimalt were surveyed as were many other inlets on the perimeter of the Gulf of Georgia. The Beaver carried Governor Douglas to Sitka in 1840 to discuss, with the Russians, their mutual interests in the fur trade of the North West. In 1843 Douglas took the Beaver to Victoria where he started construction of the fort that was to become the Western headquarters of the HBC.

And many of the voyages had their own unique adventure. Mutiny and revelry were not unknown aboard the small paddlewheeler. During the winter of 1838 the Beaver mutinied at Fort Simpson after the harsh Captain McNeil had caned two crewmen and disciplined two stokers with twenty-four lashes each. However, the rebels were quelled and dealt with severely.

A more peaceful and equally colorful episode occurred two years later when a Quakeoith Indian chief boarded the Beaver near Comox with a spirited 'make love not war' philosophy. In his writings Governor Simpson described the antics of the chief on a former visit to the Beaver, when, with great enthusiasm, the amorous native 'made love to the captain's wife . . . transferred his attention to Mrs. Manson . . . till, on being sent by her to negotiate with her husband, he

gravely backed his application by offering him a large bundle of furs.' On this occasion, during the seventy-mile voyage to his village, the chief 'took a great fancy to an English woman on board.'

In 1853 the Beaver was joined by her sister ship, the SS Otter, and both vessels soon found their capacities tested by the demands of the gold rush to the Fraser River. In 1859 the Beaver took time out from hauling prospectors to carry British troops to San Juan Island in the Gulf of Georgia for the famous 'Pig War' confrontation with the Americans.

After a two-year rest in the Victoria harbor—competition paid the HBC to keep her idle—she was refitted as a survey ship. In 1870 she assumed her next role, as a tug. The fine old lady plodded through another decade. In 1853 she struck rocks at the entrance to Burrard Inlet. The Victoria Colonist editorial cried 'Burrard Inlet rocks will scarcely succeed where those of the Fuca Straits failed.' On that occasion the writer was correct. The Beaver was refloated and put out to graze until 1887 when she returned to Burrard. Hastings Mill and Moodyville had begun to bustle and it was the Beaver that carried passengers between Gastown and the quiet North Shore settlement. But a mysterious fate was awaiting the Beaver.

On the evening of July 26, 1888, the ship's crew said its goodbyes at the Sunnyside Hotel near Lost Lagoon. Soon the aging sternwheeler was hugging the southerly shore as she passed through the First Narrows en route to Nanaimo. Suddenly the Beaver was fast on the rocks off Prospect Point. The soggy survivors climbed ashore, trekked across Stanley Park and reconvened in the warm Sunnyside. Although they no doubt related their tale to all listeners, the explanation for the wreck is lost in the past.

The Beaver, after more than half a century of service, was to spend four years in its shallow grave. In that time souvenir hunters picked the historic cadaver clean. It was left to the wake of the passing steamer, Yosemite, to dislodge the skeleton in late June, 1892, and draw the bones to more honorable depths. The hulk slipped from the bank into 20 fathoms of salt water—and history. Today a monument stands at Prospect Point and declares 'The story of the Beaver is the story of the early development of the Western Coast of Canada.' It is quite a story.

THE WONDERFUL WORLD OF LITTLE BOATS

BY DON OLESEN



Reprinted by permission - Don Olesen, Rudder.

Abaft the Beaufort Scale: Well, sir, the Coast Guard says that us boatmen should be better educated "even if we have to insist that this education be mandatory." The service wants to develop a self study course which might be offered to the states as "the basis for issuance of a safety certificate, or license." Right on, sirs! As a public service, this department hereby offers the Government our own Boating Operator Quiz, meticulously researched by our panel of internationally-known nautical experts. (For correct answers, kindly rip the top off one Chris-Craft and send with \$23.10 to defray mailing costs.) Ready?

1. On a vessel, "abaft" is (a) up, (b) down, (c) back there somewhere behind something or other, (d) a command given a crew member, such as "your feet are filthy, go take abaft."

2. When a boat is "swamped," it is (a) aground in a marsh, (b) lost in a swamp.

3. One short blast from an approaching freighter means (a) get the hell out of the way, (b) pass with the left side of your boat to the left side of our boat, (c) I like your mate's polka dot bikini.

4. Force 9 on the Beaufort Scale is a wind strong enough to (a) rumple

daisies, (b) pick up a 90-pound girl and whip her out like a cocktail pennant, (c) register from 47-54 mph and turn the skipper's face the color of raw putty.

5. On a sailing vessel, the "boom" is (a) something from a comic Irish song about a guy named Casey, (b) the sound made by the spar at the bottom of the sail when it strikes a crew member's head, (c) the sound made by a crew member's head when struck by said spar.

6. When your boat is approaching another at right angles and the bearing is constant, you should (a) take a stiff drink and forget it, (b) send out MAYDAY on the radio, (c) get the hell out of there.

7. In weather terminology, a "low" describes (a) the state of the boat's liquor locker, (b) a low hanging cloud, (c) the state of crew morale due to (a).

8. The proper way to anchor a boat is (a) toss the anchor overboard, (b) lower the anchor gently, (c) lower the anchor gently after first attaching an anchor line.

9. A "granny" knot is (a) a knot designed to immobilize Granny, (b) a lousy square knot, (c) a silly knot Granny learned in '02 at Camp Minniehoola for Girls.

10. A "yaw!" is (a) an expression widely used in the American Southland, usually in the version "yaw! come", (b) a sailboat with a little sail up front, a big sail in the middle and a little sail back there.

11. In sailboat parlance, a "leech" is (a) a carnivorous, aquatic, bloodsucking annelid worm used to bleed ailing crew members, (b) the back edge of a fore-and-aft sail, (c) the chap who drinks your booze all summer but never shows up at fitting-out time.

12. A "fisherman's bend" is (a) an elaborate knot designed to immobilize Granny, (b) a bend in a trout stream, (c) the angle assumed by a fisherman after three hours in a rough Atlantic chop.



P & O LINES



S.S. CANBERRA
818 feet



S.S. ORIANA
804 feet



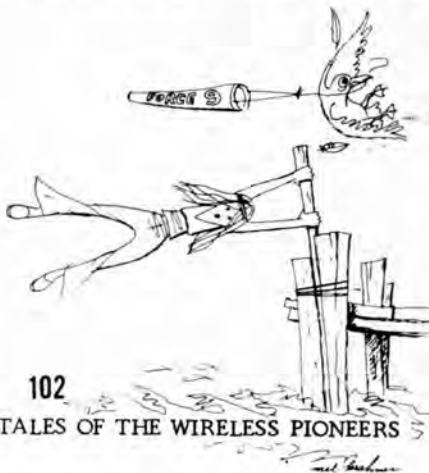
S.S. ORSOVA
722 feet



S.S. ORONSAY
709 feet



S.S. ARCADIA
721 feet





The "MOONCUSSERS"

By
Captain Walt Jaffee



he Sirens of Greek Mythology lured ships to destruction with the promises in their singing. It was up to the cunning Odysseus to outwit them by sealing his crew's ears with wax and tying himself to the mast. In more recent times there have been Sirens of another type. Taking the form of beacons, extinguished lights, muffled bells, and misplaced lights, they too lured ships to destruction with promises of safety. But their existence, rather than mythological, was quite real. Their reason for being--cash.

The sailing ship always had a difficult time with the elements. Wherever a ship foundered and grounded there were landsmen waiting to take quick advantage of her plight. Operating individually or in groups, these were the professional ship plunderers. Called wreckers or mooncussers, because of their dislike for working on moonlit nights, they practiced with great speed and efficiency. In the more treacherous coasts of the world their entire livelihood came from wrecked ships. And if ships didn't ground often enough from natural causes, they helped things along by setting out false lights. Nag's Head Beach, North Carolina, got its name from the habit of hanging a lantern around a "nag's head" and walking the horse inland, while the ship followed thinking it was approaching a beacon marking a safe passage. Once stranded, the mooncussers swarmed aboard, ransacking the entire vessel. Corpses were stripped, survivors made corpses.

Perhaps the most merciless wreckers were the tin miners of the Cornish coast of England. The mines were located on coastal cliffs with a view of the ocean. Watching for ships, they often quit work

when one appeared and followed it along the coast hoping it would go aground. When it did they set to work. Survivors were stabbed, held in the surf until they drowned, or beaten on the head with rocks. The ship was quickly looted and dismantled. They were so skillful they could leave the area in a short time without the slightest trace remaining of the wreck. The corpses were stripped and buried in a hole in the beach.

The Scilly Isles were another wreckers haven. Located southwest of Land's End, these British islands were ideally situated for stranding ships returning from foreign wars. A favorite siren consisted of a light tied between a cow's horn. Several of these gave the appearance of ships riding safely at anchor. If the wreck held liquor, there was a mad rush of half-drunk men and women, all trying to fill pans, kettles, pails and pitchers. A local minister included in his prayers, "We pray Thee, O Lord, not that wrecks should happen, but that if wrecks do happen, Thou wilt guide them into the Scilly Isles, for the benefit of the poor inhabitants."

Poor they were. Plunder was considered a birthright. None of them tasted tea until a wreck brought some. Then they were flush with it. A ship wrecked with a full load of coffee gave them their only taste of this beverage. When the GOOD SAMARITAN went aground on October 22, 1846, it was considered an act of providence.

"The Good Samaritan came ashore
to feed the hungry and clothe the poor.
Barrels of beef and bales of linen,
No poor man shall want a shillin'."

In 1680 a lighthouse was placed at St. Agnes, Scilly Isles, as a warning to ships. Immediately the people were against it. They knew it would interfere with their profession. But, for the next hundred years, it didn't work correctly. Sometimes bright, it was often dim, and occasionally extinguished. Many charged that the light was used to bring wrecks rather than prevent them. Strangely enough the light keeper was closely related to several wreckers.

On the other side of the Atlantic the cussers did as well. Block Island was well situated for wrecking. Block Islanders were as merciless as their English counterparts. When the PRINCESS AUGUSTA went down in 1738 with 350 religious refugees from the German state of Palatinate, they went to work.

"Into the teeth of death she sped;
(May God forgive the hands that fed
the false lights over the rocky head!)
Down swooped the wreckers, like birds of prey,
Tearing the heart of the ship away,
And the dead never had a word to say.
In their cruel hearts as they homeward sped,
'The sea and the rocks are dumb,' they said:
'There'll be no reckoning with the dead.'"

John Whittier wrote the poem a hundred years after the incident, but it was based on fact.

Even the wrecker's own flesh and blood meant nothing when there was salvage about. Joseph Mitchell told an interesting story in the January 11, 1947 issue of The New Yorker.

"Old Chrissy was an old rascal of a woman that was the head of a gang of wreckers. They lured ships with false lights, and they killed the sailors and passengers, so there wouldn't be any tales told. Old Chrissy took charge of the killing. She had a big club and she'd hist her skirt and wade out in

the surf and clout the people on the head as they swam in or floated in. She called a wreck a wrack, the way Block Islanders do. That's the way she pronounced it. One night, she and her gang lured a ship up on the reef, and the sailors were floating in, and old Chrissy was out there clouting them on their heads. One poor fellow floated up, and it was one of old Chrissy's sons, who'd left the island and gone to the mainland to be a sailor. He looked up at old Chrissy and said, 'Hello, Ma.' Old Chrissy didn't hesitate. She gave him a clout on the head with her club. 'A son's a son,' she said, 'but a wrack's a wrack.'"

Sable Island, off the coast of Nova Scotia, was wrecker's heaven. Twenty miles long and a mile wide it had the able advantages of violent storms, perpetual fog, constant wind, and extreme cold. There are over five hundred wrecks around Sable Island. At the beginning of the 19th century the Canadian government placed a superintendent and some assistants on the island to aid survivors of shipwrecks and salvage what they could. Apparently the illegal wreckers had news of their coming. Arriving, the superintendent found only an old man and woman and a herd of goats. Once established, a government vessel serviced the island by bringing supplies and taking salvage to be sold on the mainland. Except for it the only other source of communication was carrier pigeon. Sable Island had such a reputation for murder and plunder that on at least two occasions the government lifesavers were beaten off by crews of wrecked vessels.

Hatteras, the Bahamas, and Florida didn't have constant bad weather to depend on. Here the mooncussers were, of necessity, more wily. Except for an occasional hurricane or tropical depression, they had to cause their own wrecks. Mimicking the horse at Nag's Head, some of the Bahama Islanders festooned their goats with lights. Lightkeepers were frequently in cahoots with wreckers. The light at Dry Tortugas was one of the more infamous. Many skippers blamed the lightkeeper for dimming or extinguishing the light on the approach of a vessel. Coincidentally, when a ship grounded, a wrecking boat was always at the lighthouse landing stage and almost immediately on the scene.

Another favorite trick was for the wrecker to offer his services as pilot through the Florida Straights. If accepted he purposely ran the ship aground, then salvaged it, collecting handsomely for his services. Many pilots were so skilled they could hang the ship on a pinnacle in such a manner that soundings still showed safe water all around.

Jacob Houseman was the most accomplished of the wreckers. Unable to get along with his fellow salvors in Key West and dissatisfied with the amount of salvage awarded by local arbitration boards, he created his own empire. Buying the island of Indian Key, he loaded building supplies on his three wrecking schooners and moved there. He built a model town with straight, well planned streets, cisterns, and flowers around the central square. There were wharves, warehouses for salvage, a mansion for himself, and small cottages for his crews and slaves. To top it all off he built a store for trading with Indians and a hotel complete with bar, billiard room, and bowling alley. By 1855 there were forty people living there, the store was doing \$50,000 a year. Cultivating fishermen, beachcombers, and bums with credit from his store, he soon developed an extensive spy system that located wrecks for him almost before they happened.

But when a court was established in Key West to supervise matters of wreckage and salvage, Houseman got in trouble. When possible he corrected things

before they got to court. Witnesses were cheap. To avoid collusion charges he once towed a vessel to Charleston for settlement of his claim. Another time the master of a ship committed "suicide" during salvage operations. When legally possible he organized his own boards of arbitration, providing his own "disinterested" captains to sit in judgement on them. Finally, charged at Key West with stealing goods from a wreck, he had the book thrown at him. All his salvage claims were voided and his wreckers license revoked.

Traveling to Tallahassee he brought all his influence to bear. The result was Monroe county was divided into two counties. Key West was the seat of one, while, on February 4, 1836, Indian Key became the seat of the newly formed Dade county. Houseman built a courthouse, appointed a county judge, lobbyist in Washington, and county officials. Criticism meant nothing. All fifteen of the county's eligible voters were Houseman's men.

But he began to overreach himself. His store became unpopular. He became overbearing. He made enemies by putting seamen and Indians in stocks for petty crimes. Finally he offered to catch or kill every Indian in the state of Florida for the sum of \$200 a head. No one took him up on it, but the Indians heard of it. On August 7, 1840 they attacked and burned Indian Key to the ground. Houseman and his wife escaped, broke. Setting aside their animosities, the people of Key West gave him a job on a wrecking boat. In May of the following year he was killed in a salvage operation.

The end of the age of sail marked the end of the mooncusser. With improved navigation, communications, and ship construction, there was no longer a livelihood for him. Stricter laws and enforcement of laws made it difficult for him. Sophisticated captains were no longer lured ashore by wreckers sirens. But there is a reminder. Each year, off Block Island, a ghost light appears to mark the stranding of the PRINCESS AUGUSTA.



SHORE VILLAIN — Rodolf Raven, chief wrecker of Barnegat, is pictured on cover of 1848 novel, housed in Special Collections Department of Rutgers University Library. Rodolf is shown with tools of his trade, a midnight black banner promising bad tidings for seamen and the false beacon he used to lure ships to destruction.

Clipping from early day newspaper about use of 'false lights' luring ships to their destruction.

FALSE LIGHTS

Accounts of shipwrecks and pirates who lured them by means of false lights and other artifices abound in volumes of fact and fiction in the library's New Jerseyana collection. The Rutgers documents leave little doubt that shore residents often plundered the cargoes of wrecked vessels which washed ashore. But whether bands of pirates actually caused many of the wrecks is debatable.

Charges that shore residents failed to assist perishing passengers and often plundered the bodies of the dead were so prevalent by 1846 that Gov. Charles C. Stratton appointed a special commission to investigate them. The Rutgers Library's original copy of the commission's report states that New Jersey citizens often displayed great heroism in assisting shipwrecked persons and concludes that the charges "are utterly untrue" and "the state ought to be relieved from the odium of such barbarity."

No relief was in sight, however, as far as one Charles Averill, who earlier had authored such sea epics as "The Secret Service Ship" and "Corsair King" in 1848 published a novel titled "The Wrecker: or, The Ship-Plunderers of Barnegat, A Startling Story of the Mysteries of the Sea-Shore."

The S.S. American Traveler



SHIP OF FIVE NAMES The USAT. CAMBRAE in San Francisco Bay, Circa 1922. First known as Hull No. 669 in 1918 she was christened SS. SHOHOKIN. Then she was renamed the USAT CAMBRAE and then the SS American Exporter for a short period. She became the SS AMERICAN TRAVELER. She was sold to Belgium interests in 1940 and renamed the SS. VILLE D' ARLON. On Dec. 2 1940 she was torpedoed by a German submarine. The 'Hog Island' design with 'plumb' bow and stern and no rake to masts or smokestack was designed to confuse submarines. In this case it did not. Photo from collection of Frank O. Braynard.



By Frank O. Braynard

The "Bridge of Ships" built for World War I was to have included a fleet of seventy "B" troop/cargo ships. Twelve were completed and our story is of the first of these, a ship which had five names, was too late for World War I but was lost in the second war after a somewhat checkered inter-war period as a small passenger/cargo ship. Designed so as to confuse German submarines as to which way she was going, the little liner's career never seemed to know where it was going. Despite her plumb straight bow and stern, and her masts and stack that had no rake, the first of the "B"s had a sturdy handsomeness about her. And despite her now here and now there career, she is a little liner well worth remembering.

She was Hull Number 669 of the famous American International Ship-building Company at Hog Island. Being the first of her class a superb model of her was made, which is now on display in the Steam Room of the South Street Seaport Museum. All the ships of this class were to be named after Indian tribes, and she was called the SHOHOKIN. She was designed to carry 2,300 troops, 77 officers and a crew of 81. Her dimensions were: length 437', beam 58' and depth 40'. She had a gross tonnage of 7,555.

Her single screw was powered by two oil-burning steam turbines with a shaft horsepower of 6000 and she could make 15 and even 16 knots.

By some quirk of fate the SHOHOKIN always seemed to be outdone by the SHOHOLA, second of the "B" ships. The keel of the former was laid on Nov. 9, 1918, but her sister's keel went down on Nov. 11, 1918, which turned out to be Armistice Day. By Jan. 29, 1919 the SHOHOKIN was only 9% completed, but the SHOHOLA was 15% done, and on October 27, 1919, the SHOHOLA was ready for launching. A most distinguished visitor was in the yard that day and asked to christen her. He was King Albert of Belgium. The SHOHOKIN went down the ways some weeks later, even the date is uncertain and whether anyone christened her is not known. And, as might be expected, the SHOHOLA outlasted the SHOHOKIN by many years, becoming a Swiss-owned luxury liner and serving out of a Belgian port.

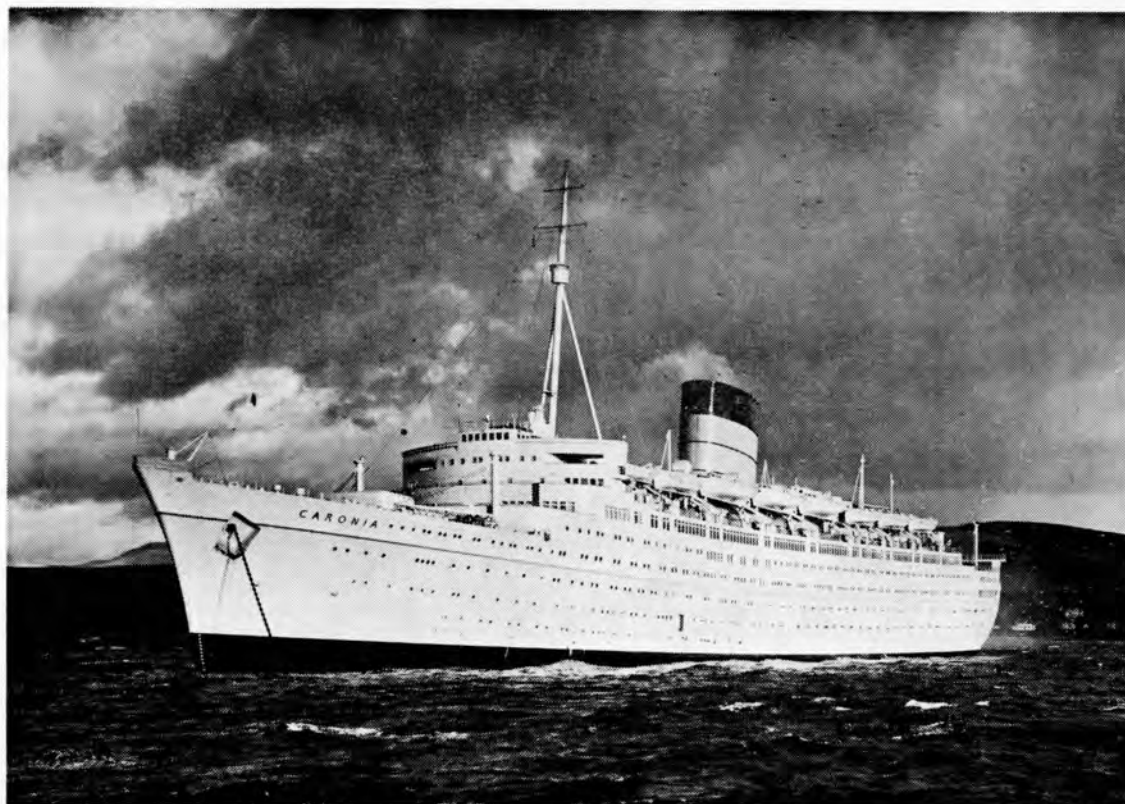
Before any of these vessels were launched, it should be mentioned here, the Shipping Board thought better about their names. Hull Number 675 had been called the SISLADOBSIS, for example, and they were all hard to pronounce and harder to remember, eleven of the twelve were given names of World War I battles. The SHOHOKIN, renamed COMBAT, was delivered in October, 1920. The others were renamed ARGONNE, CHAUMONT, ST. MIHIEL, CHATEAU THIERRY, CANTIGNY.

(Concluded on Page 108)



UNITED STATES - KJEH

The SS UNITED STATES was launched 1951 and broke all records for speed at 42K. 53,329 Tons, 990' long, 101.7 beam. Taken out of service 1969.



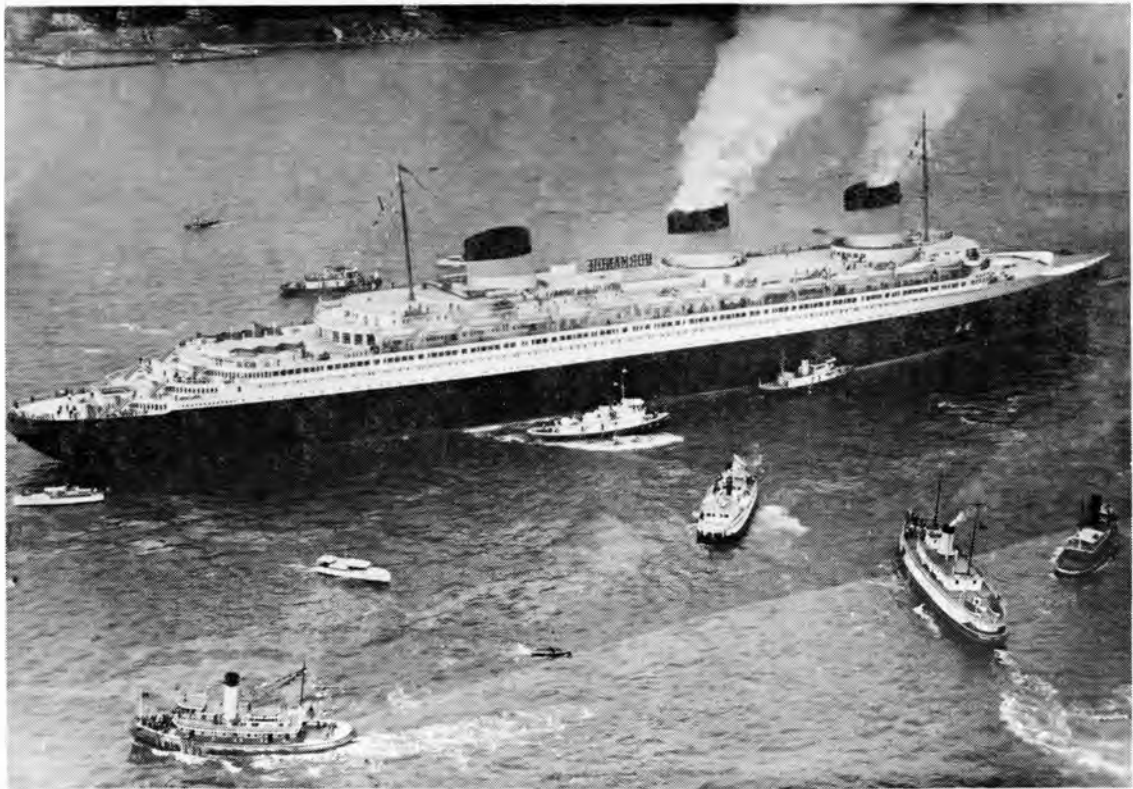
CARONIA - GYKS

The CARONIA was built by Cunard in 1948 especially designed for cruising - all air conditioned. 34,183 Tons, 22K, Space for 920 Passengers. It replaced Caronia 1 built in 1904. Photo from collection of David L. Brown.



MAURETANIA - GTTM

The MAURETANIA was built in 1939 replacing namesake built in 1906. She was of 35,674 Tons. The First Mauretania held the 'Blue Riband for 28-years.



NORMANDIE - FNSK

The SS NORMANDIE was built in 1935. 83,423 Tons reported "most lavish vessel ever built". Cost 80 million, held Blue Riband 1935, carried 1975 pgrs, 1345 crew. Turbo-Elec. Drive.

"BRIDGE OF SHIPS". BRAYNARD

(Continued from Page 105)

SOMME, AISNE, OUREQ, MARNE and TOURS. The 12th became the seaplane tender WRIGHT.

In the twenties, while the CAMBRAI and six sisters continued to serve under military command, the other five were bought for use as passenger/cargo ships under the American Merchant Line houseflag. Led by the CANTIGNY, ex SHOHOLA and by then renamed AMERICAN BANKER, the little liners built up a very fine reputation as one-class ships carrying only 120 passengers between New York and London. They were far from luxurious but all their cabins were outside, they had lots of deck space for sports and two promenade decks.

In 1931 the CAMBRAI and SOMME were traded by the Army for the big U.S. Lines steamship REPUBLIC. U.S. Lines had acquired the American Merchant Line and thought they could use seven of the sisters on the run. At first the CAMBRAI was renamed AMERICAN EXPORTER, but when American Export Line protested that there would be confusion with such a name, she was renamed AMERICAN TRAVELER.

"Sail any Friday on one of these fine ships . . . cruise up the Thames . . . land in the heart of London . . . cheery outside staterooms . . . excellent cuisine . . . delightful fellow travelers . . . all deck games," a company ad said in September, 1931. It was the depth of the depression and the fare to London was only \$100. The AMERICAN TRAVELER and the AMERICAN IMPORTER, ex SOMME, were put on the run to Cherbourg and Hamburg. All the way to Hamburg, an extra two and a half days, cost only \$110. What a bargain! Unfortunately, however, delays in the delivery of the CAMBRAI by the Army prevented her from going into service in the Fall of 1931, as advertised. By spring it had become apparent that the London and Hamburg services could be kept going with six instead of seven ships and so she was kept as a spare. How often, if ever, she made a voyage as an American Merchant Line vessel in this period is not known.

In mid 1934 all seven sisters were towed from Staten Island to Hoboken to be laid up. The depression was at its worst, but things began to get better and in December, 1934, two of the ships were put on a new run to Belfast. The next October the AMERICAN TRAVELER was brought out of retirement to be a third ship on this run. Her first master was Harry Manning, who would go on to command the speed queen UNITED STATES when she broke all Atlantic records in 1952 on her maiden voyage. For the next four years she successfully maintained this run and then was put on the intercoastal service under the houseflag of Panama Pacific Line. Late in 1938 the American Merchant Line called and the little AMERICAN TRAVELER returned to the North Atlantic. She served as a freighter between New York and Glasgow, with a return stop at Boston. Business was now booming because everyone knew war was coming. It came and on September 16, 1939, two weeks after hostilities began, the TRAVELER's crew struck. They demanded a 40% increase in pay, war risk insurance and war zone bonuses. After a week they settled for a raise of 25% and other benefits. The TRAVELER sailed out again, straight into the war area. By necessity her passenger quarters were reactivated and she brought home large, for her, loads of stranded American tourists. Then the Neutrality Act went into effect, stopping all American-flag service into the war zone.



USAT CAMBRAI leaving the Brooklyn Army Base with 1000 troops bound for China, Philippines and Hawaii to relieve garrisons in 1925. You can note the shield of the U.S.A. on her stern and on the smoke stack of the large tug pushing amidships. There is ice in the water as the ship is eased out of her pier. Photo by Frank O. Braynard from Keystone.

An effort was made to put her and her six sisters under the Panama flag, but Cordell Hull, Secretary of State, ruled that this was too obvious a device to circumvent the neutrality law. Then a Norwegian company agreed to take the fleet over, but the Norse government blocked this. Finally in February, 1940, a Belgian flag corporation bought all seven ships. Isolationist Rep. Hamilton Fish called it an "outrageous subterfuge and breach of our neutrality," but the deal went through, with U.S. Lines retaining 40% interest in the ships.

The sales price for these seven vessels and two larger "President" liners was only \$4,000,000, and the down payment was only \$137,000 so it really was a farce, but business was business and there was real money being made.

At this point the AMERICAN TRAVELER got her fifth name. She became the VILLE D'ARLON. Her stacks got a new color scheme and the Belgian flag replaced the Stars and Stripes on her sides. Out she went into the waters controlled completely by German submarines.

The Germans made quick work of the sturdy little fleet, sinking the VILLE DE NAMUR, ex AMERICAN MERCHANT, on June 19, 1940; the VILLE DE GAND, ex AMERICAN IMPORTER, on Aug. 18, 1940; the VILLE DE HASSELT, ex AMERICAN TRADER, on Aug. 31, 1940; the VILLE DE MONS, ex AMERICAN SHIPPER, on Sept. 1, 1940, and the VILLE D'ARLON on December 2, 1940. The VILLE DE LIEGE, ex AMERICAN FARMER lasted until April 13, 1941, and the VILLE D'ANVERS, the ex AMERICAN BANKER, ex CANTIGNY, ex SHOHOLA, second of the seventy projected "B" boats continued right through the war unscathed.

ABOUT THE AUTHOR

Frank O. Braynard is one of the leading authorities on "SHIPS" in the world. He is publishing a series of 4 books on the S.S. LEVIATHAN after years of research. Volume 1 published 1972 is a 'classic' and No. 2 is due out Fall 1974. We think ship 'buffs' the world over will treasure these books which are sure to become 'collector's items'. Frank is no stranger to our members as we have published many of his stories in past releases. "Sparks" recommends that those interested in stories of the sea - be sure and read Frank Braynard's book.

